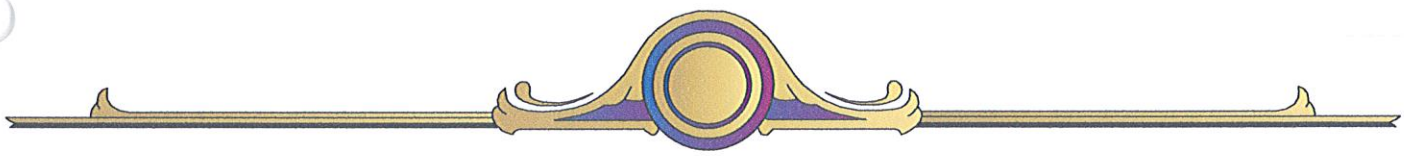
EMERGENCY ACTION PLAN

BASIN CREEK DAM
No. 1 and No. 2

BUTTE-SILVER BOW
DEPARTMENT OF PUBLIC WORKS
WATER UTILITY DIVISION

July 2010



EMERGENCY ACTION PLAN

BASIN CREEK DAMS
#1 and #2

BUTTE-SILVER BOW
DEPARTMENT OF PUBLIC WORKS
WATER UTILITY DIVISION
124 WEST GRANITE STREET
BUTTE, MONTANA 59703-0667
(406) 497-6540

July 2010

<u>If Basin Creek Dam #1 is failing or failure seems imminent, call:</u>

Butte-Silver Bow County Sheriff.....911 or (406) 497-1120 Ext 1

Disaster and Emergency Services.....(406) 497-6295

Mr. Roger Ebner .....Home: (406) 723-2084

.....Cel: (406) 490-5782

Mr. Dan Dennehy, Director of Public Works ..... Office: (406) 497-6520

.....Home: (406) 565-0358

.....Cel: (406) 490-5802

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LIST OF APPENDICES

I. INTRODUCTION

A. Purpose

The purpose of this emergency action plan (EAP) is primarily to safeguard the lives of and secondarily to reduce property damage to the citizens of Silver Bow County living in or near the city of Butte, along Basin Creek, Silver Bow Creek and the Clark Fork River in the event of flooding caused by a failure of Basin Creek Dam #1and/or Basin Creek Dam #2

B. Description of Dam

Basin Creek Dam #1 is in Silver Bow County, in Section 12, Township 1 North (T1N), Range 8 West (R8W), and located on Basin Creek, a tributary to Silver Bow Creek. It is owned by the Butte-Silver Bow Dept. of Public Works Water Utility Division, 124 West Granite Street, Butte, Montana 59701, and is used for municipal water supply for the Butte-Silver Bow area. Technical data pertaining to Basin Creek Dam #1 and its structures are shown in Appendix A.

Basin Creek Dam #2 is in Silver Bow County, in section 18, Township 1 North (T1N), Range (R7W), and located on Basin Creek, a tributary to Silver Bow Creek. It is owned by the Butte-Silver Bow Dept. of Public Works Water Utility Division, 124 West Granite Street, Butte, Montana 59701, and is used for municipal water supply storage for the Butte-Silver Bow area. Technical data pertaining to Basin Creek Dam #2 and its structures are shown in Appendix A

C. Access to Dam

Basin Creek Dam #1 is located at the end of Basin Creek Road, about 10 miles south of Butte. Note that the county road may become flooded! The nearest telephone to the dams is at the chlorinating building below the dam or at the home of Mr. Marty Hovan approximately ¼ mile below the dam.

D. Hazard Area

The evacuation area extends along Basin Creek, portions of the city of Butte, along Silver Bow Creek, and portions of areas along the Clark Fork River to a point about three miles south-east of Garrison, MT, as shown in Appendix B. Hazards include the possible inundation of occupied dwellings, Montana Rail Link Railroad, and Interstate Highway 15/90. Inundation and evacuation maps are in Appendix B.

E. Responsibility and Authority

Pursuant to the Dam Safety Act, Chapter 15 of Title 85, MCA, the dam owner is responsible for production, coordination, maintenance, and implementation of this emergency action plan. The extent of owner implementation was defined through coordination of this plan with the county sheriff and the disaster and emergency services (DES) coordinator.

F. Periodic Review/Update

The owner will review/update this EAP annually. Review/update by a qualified professional engineer will be accomplished as required by the dam's operating permit, but no less than every five years.

G. Approval

By my signature, I acknowledge that I, or my representative, have reviewed this plan and agree to the tasks and responsibilities assigned herein for my department and/or agency.

June 15, 1995

Signature Date

BUTTE-SILVER BOW CHIEF EXECUTIVE

June 15, 1995

Signature Date

DISASTER AND EMERGENCY SERVICES

June 16 - 1995

Signature Date

BUTTE-SILVER BOW SHERIFF'S DEPARTMENT

6/16/95

Signature Date

BUTTE-SILVER BOW FIRE CHIEF

5/20/96

Signature Date

DEER LODGE COUNTY SHERIFF'S DEPARTMENT

5-20-96

Signature Date

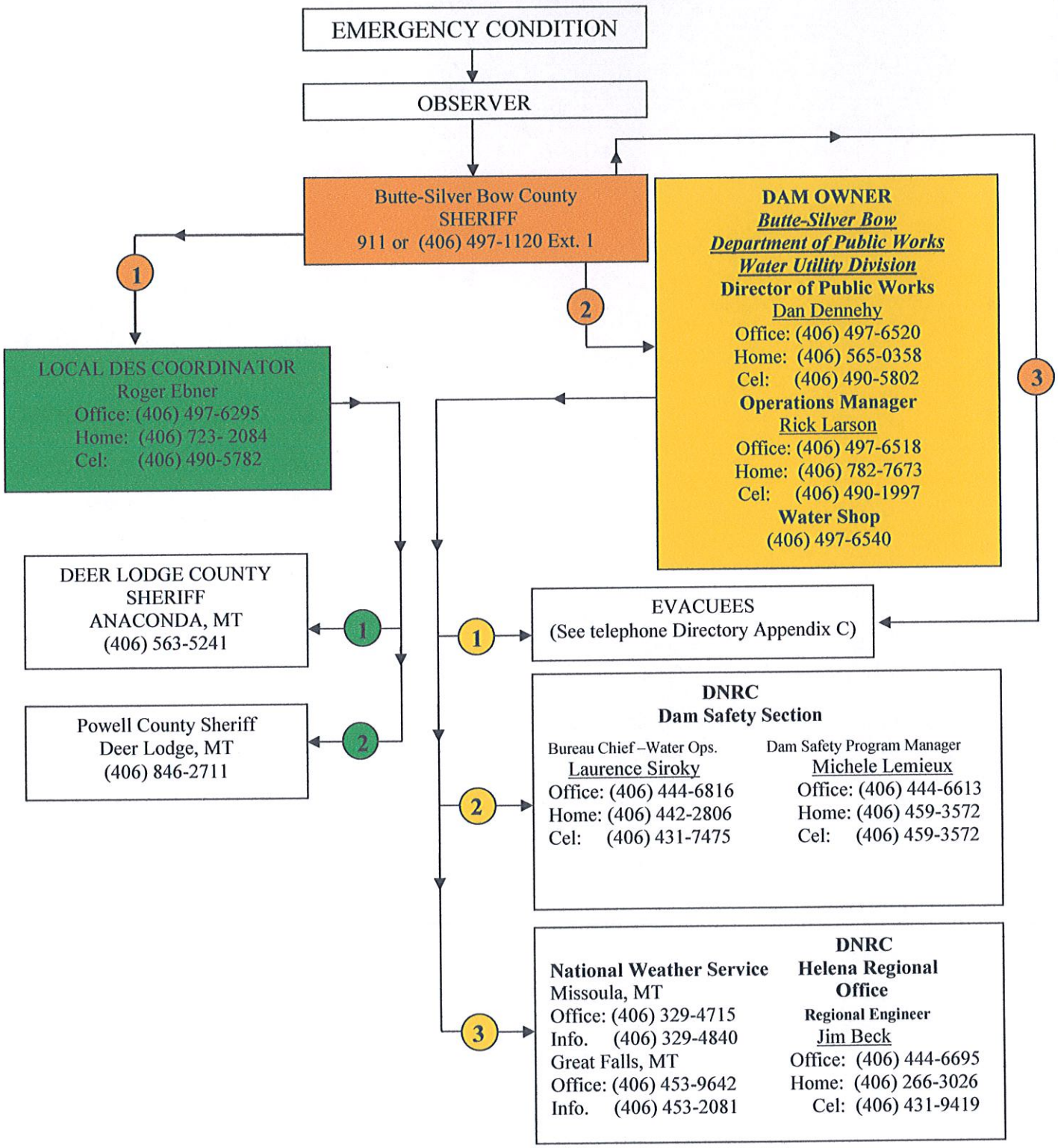
POWELL COUNTY SHERIFF'S DEPARTMENT

II. NOTIFICATION PROCEDURES

A. Imminent or Actual Failure

It is important that the you accurately judge whether the dam is about to fail. If you aren't sure whether the dam is threatened, seek advice from a qualified engineer or call the Dam Safety Section of the Department of Natural Resources and Conservation (DNRC). If Basin Creek Dam #1 is failing, two things must be done immediately: (1) the hazard area downstream from the dam must be evacuated, and (2) any steps that might save the dam or reduce damage to the dam or hazard area downstream should be taken. (Refer to the map in Appendix B to determine the areas that are likely to be inundated if the dam fails). The evacuation will be handled according to the EAP, and should be initiated as shown in Figure 1.

FIGURE 1
Basin Creek Dam #1or #2
ACTUAL OR IMMINENT FAILURE
"NOTIFICATION FLOWCHART"



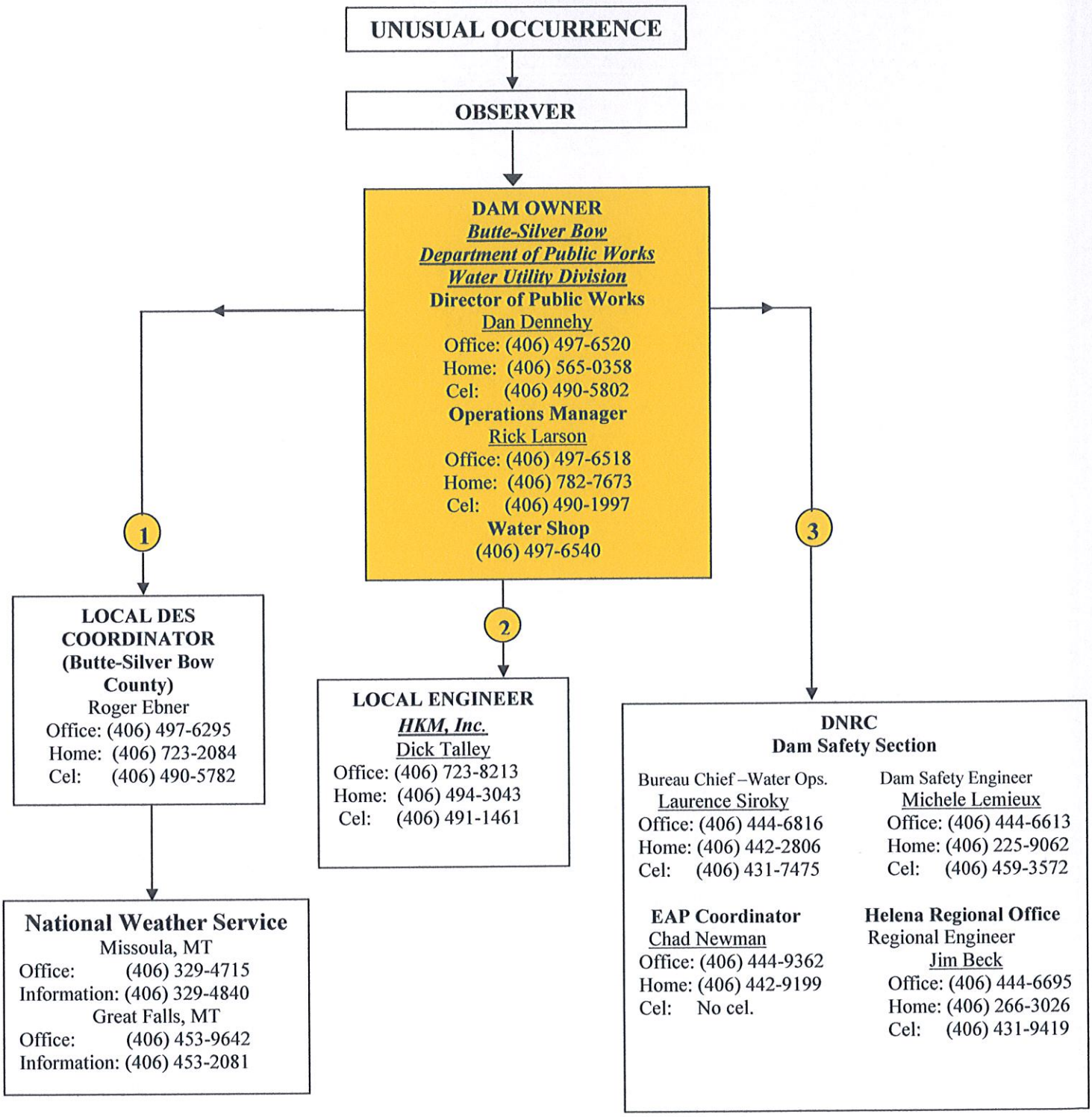
As dam owner, it is your responsibility to:

1) Call the Sheriff's Dispatch Center 911 or [(406) 497-1261] and Disaster and Emergency Services [(406) 497-6295]. Be sure to say, "This is an emergency." They will call other authorities and the media and begin evacuation.
2) Do whatever is necessary to bring anyone in immediate danger to safety. This includes someone on the dam, directly below the dam, or boating on the reservoir, or evacuees if so directed by the sheriff.
3) Keep in frequent touch with Disaster and Emergency Services staff. They will provide non-technical advice on how to handle the emergency.
4) If all means of communication are lost:
    a. Try to find out why
    b. Try to get to another radio or telephone that works
    c. Get someone else to try to reestablish communications. If these means fail, handle the immediate problems as well as you can, and periodically try to reestablish contact with Disaster and Emergency Services.

B. Potentially Hazardous Situation

A potentially hazardous situation is an event or condition not normally encountered in the routine operation of the dam and reservoir. Among the unusual occurrences that may affect the dam are dam embankment problems, failure of the spillway or outlet works, heavy precipitation or rapid spring snow melt, landslides, earthquakes, erosion, theft, vandalism, acts of sabotage, and serious accidents. These occurrences may endanger the dam, the public, or the downstream valley and may necessitate a temporary or permanent revision of the dam's operating procedures. Help in these situations can be obtained by notifying those people shown in Figure 2.

FIGURE 2
Basin Creek Dam #1or #2
POTENTIALLY HAZARDOUS SITUATION
"NOTIFICATION FLOWCHART"



1) If the dam owner discovers an unusual condition of the dam embankment that could threaten the structure:
   a) Have a qualified engineer inspect the dam as soon as possible to determine whether emergency action is necessary.
   b) Notify the county Disaster and Emergency Services Coordinator ((406) 497-6295) of the potential problem.
   c) Contact the Dam Safety Section of the Department of Natural Resources and Conservation (DNRC).
2) Among the conditions the dam owner should watch for are:
   a) Overtopping of the dam by flood waters
   b) Loss of material from the dam crest due to storm wave erosion
   c) Slides on either the upstream or downstream slope of the embankment as evidenced by
      1. Sloughing
      2. Cracking
      3. Bulging
      4. Scarping
   d) Erosional flows through, beneath, or around the embankment as evidenced by
      1. Excessive seepage
      2. Discoloration of the seepage
      3. Boils on the downstream side
      4. Sinkholes
      5. Changes in the flow from drains
   e) Failure of outlets or spillways due to clogging or erosion

f) Movement of the dam on its foundation as evidenced by

1. Misalignment
2. Settlement
3. Cracking

3) When the dam owner calls either an engineer or DNRC to report a problem, use the form in Appendix D to ensure you can provide sufficient information for the engineer to analyze the problems. In addition, prepare a sketch showing the extent of the problem. Revise the sketch periodically if the problem develops further. Section III includes further guidelines for courses of action to take to mitigate the effect of many problems.

C. Posting of the Notification Flowchart and Distribution of the EAP.

The Notification flowchart is posted at the dam of Basin Creek Dam #1 and a copy of the EAP is in the chlorination building just below the dam of the Basin creek #1. The Butte-Silver Bow County Sheriff's Office and the Silver Bow County DES Coordinator have copies of the plan.

III. MITIGATION ACTIONS

Besides normal monitoring of the dam's condition, which is done at least monthly, the owner will provide continuous monitoring and inspection during and after extreme events such as storms and earthquakes. Information on the magnitude of an earthquake or storm can be obtained from the National Weather Service. Actions are suggested below to mitigate problems that may develop, but those actions should never be continued at the risk of injury or at the expense of lessening efforts related to evacuation. Monitoring should identify any of the following potential problems.

A. Potential Problems and Immediate Response Actions

1) OVERTOPPING BY FLOOD WATERS

   a) Open outlet to its maximum safe capacity.

   b) Place sandbags along the crest to increase freeboard and force more water through the spillway and outlet.

   c) Provide erosion-resistant protection to the downstream slope by placing plastic sheets or other materials over eroding areas.

   d) Divert flood waters around the reservoir basin, if possible.

   e) Create additional spillway capacity by making a controlled breach in a low embankment or dike section where the foundation materials are erosion-resistant.

2) LOSS OF FREEBOARD OR DAM CROSS SECTION DUE TO STORM WAVE EROSION

   a) Place additional riprap or sandbags in damaged areas to prevent further embankment erosion.

   b) Lower the water level to an elevation below the damaged area.

3) SLIDES IN THE UPSTREAM OR DOWNSTREAM SLOPE OF THE EMBANKMENT

a) Lower the water level at a rate and to an elevation considered safe, given the slope condition. If the outlet is damaged or blocked, pumping, siphoning, or a controlled breach may be required.

b) Stabilize slides on the downstream slope by

4) Weighting the toe area with additional soil, rock, or gravel, and then

5) Restoring lost freeboard by placing sandbags at the crest.

6) EROSIONAL FLOWS THROUGH THE EMBANKMENT, FOUNDATION, OR ABUTMENTS

a) Plug the flow with whatever material is available (hay bales, bentonite, or plastic sheeting if the entrance to the leak is in the reservoir basin).

b) Lower the water level until the flow decreases to a non-erosive velocity or stops.

c) Place a protective sand-and-gravel filter or boil ring over the exit area to hold materials in place.

7) FAILURE OF APPURTENANT STRUCTURES SUCH AS OUTLETS OR SPILLWAYS

a) Implement temporary measures to protect the damaged structure, such as closing an outlet or protecting a damaged spillway with riprap.

b) Lower the water level to a safe elevation. If the outlet is inoperable, pumping, siphoning, or a controlled breach may be required.

8) MASS MOVEMENT OF THE DAM ON ITS FOUNDATION (SPREADING OR MASS SLIDING FAILURE)

a) Immediately lower the water level until excessive movement stops.

9) EXCESSIVE SEEPAGE AND HIGH LEVEL SATURATION OF THE EMBANKMENT

a) Lower the water to a safe level.

a) Lower the water to a safe level.

b) Continue frequent monitoring for signs of slides, cracking or concentrated seepage.

10) SPILLWAY BACKCUTTING, THREATENING RESERVOIR EVACUATION

a) Reduce the flow over the spillway by fully opening the main outlet.

b) Provide temporary protection at the point of erosion by placing sandbags, riprap materials, or plastic sheets weighted with sandbags.

c) When the inflow subsides, lower the water to a safe level.

11) EXCESSIVE SETTLEMENT OF THE EMBANKMENT

a) Lower the water level by releasing it through the outlet pumping, siphoning, or a controlled breach.

b) If necessary, restore freeboard, preferably by placing sandbags.

B. Emergency Supplies and Resources

There is a supply of granular and clay types of soils located above and below the dam.

C. Local Contractors and Engineers

Local Contractors:

Jim Gilman Excavating Inc.,.....(406) 723-8234

In case of extreme emergency, end loaders, dozers, and other heavy equipment are available from the following:

Silver Bow County Maintenance Shop, Butte,.....(406) 497-6565

Ask for Jocko Stajcar.....(406) 497-6569

Jocko Stajcar (home).....(406) 782-3670

Engineers:

Butte-Silver Bow Water Utility Operations Manager: Rick Larson

Office.....(406) 497-6518

Home.....(406) 782-7673

Cel:.....(406) 490-1997

HKM Engineer: Dick Talley Butte, MT

Office.....(406) 723-8213

Home.....(406) 494-3043

Cel:.....(406) 491-1461

Pioneer Engineer: Brad Archibald Butte, MT

Office.....(406) 782-5177

Home.....(406) 494-6549

Cel:.....(406) 490-3032

APPENDICES

APPENDIX A

TECHNICAL DATA

FOR

DAMS #1 AND #2

Technical Data for Basin Creek Dam #1

Maximum Reservoir Capacity to the Crest of the Dam:..... **1,170 acre feet**

Normal Reservoir Capacity Measured to:

Emergency Spillway Crest:..... **1,115 acre feet (gate up)**

..... **930 acre feet (gate down)**

Normal Water Depth Measured from:

Streambed to the Crest of the Emergency Spillway ..... **79 feet (gate up)**

..... **75.5 feet (gate down)**

Dam Height Measured from the Streambed to the Crest of the Dam:..... **80 feet**

Dam Crest Width: ..... **5 feet**

Dam Width at Base: ..... **120 feet**

Length of Dam Crest:..... **275 feet**

Outlet Capacity (Blow Off): ..... **60 cubic feet per second**

Design Capacity (Distribution Pipes) ..... **15 cubic feet per second**

Spillway Capacity ..... **(gate up) 23 cubic feet per second**

Spillway Capacity ..... **(automatic gate) 203 cubic feet per second**

Date Constructed..... **1897**

Slope of Upstream Face of Dam (Horizontal to Vertical) ..... **vertical**

Slope of Downstream Face of Dam (Horizontal to Vertical) **1.75:1**

Technical Data for Basin Creek Dam #2

Maximum Reservoir Capacity to the Crest of Dam..... **290 acre feet**

Capacity Measured to the Emergency Spillway before breach ..... **196 acre feet**

Normal Capacity Measured at Crest of Breech Channel ..... **120 acre feet**

Water Depth Measured from the Streambed to the Crest of the emergency spillway..... **40 feet**

Normal Water Depth Measured to Breech..... **35 feet**

Dam Height Measured from the Streambed to the crest of dam..... **45 feet**

Dam Crest Width ..... **17 feet**

Dam Width at Base ..... **275 feet**

Length of Dam Crest..... **320 feet**

Outlet Capacity ..... **10 cubic feet per second**

Spillway capacity..... **15.6 cubic feet per second**

Date Constructed..... **1907**

Slope of Upstream Face of dam (Horizontal to Vertical)1:..... **1(upper) ; 2:1 (lower)**

Slope of Downstream face of Dam (Horizontal to Vertical) **3:1**

APPENDIX B

INUNDATION AND EVACUATION MAPS

c.f.s., and above Flint Creek, 17,500 c.f.s. Discharges between these locations were interpolated.

TABLE 1
Peak Discharges at
Various Distances Downstream of Basin Creek Dam #1
Clear Weather Breach

USGS Montana Quadrangle	Distance Downstream from Dam (miles)	Flood WSE (ft-msl)	Flood Discharge (cfs)	Time to Peak Discharge* (hr:min)
Mt. Humbug	Dam	5,870	42,300	0:00
Mt. Humbug	0.2	5,782	41,700	< 0:05
Mt. Humbug	0.9	5,745	40,400	0:05
Butte South	3.6	5,645	38,100	0:20
Homestake	7.8	5,526	24,000	1:20
Butte South	12.4	5,446	15,900	2:50
Butte North	17.0	5,367	11,400	4:15
Ramsay	21.4	5,289	9,560	5:25
Opportunity	25.4	5,173	8,440	6:15
Opportunity	30.9	5,004	6,840	8:50
Warm Springs	35.4	4,885	5,790	10:50
Warm Springs**	39.9	4,743	5,070	13:30

* NOTE: The Time to Peak Discharge is the time from when the maximum flow is moving through the breached dam until the maximum flow occurs at the specified distance downstream. Substantial flooding, although it is not the maximum, will occur shortly before the specified time.

** NOTE: At approximately 37 miles downstream of Basin Creek Reservoir, peak discharge is less than the 100-year discharge for Clark Fork.

TABLE 2
Peak Discharges at
Various Distances Downstream of Basin Creek Dam #1
PMF with Breach

USGS Montana Quadrangle	Distance Downstream from Dam (miles)	Flood WSE (ft-msl)	Flood Discharge (cfs)	Time to Peak Discharge* (hrs)
Mt. Humbug	Dam	5,873	118,000	0:00
Mt. Humbug	0.2	5,792	117,000	< 0:05
Mt. Humbug	0.9	5,757	110,000	< 0:05
Butte South	3.6	5,656	102,000	0:15
Homestake	7.8	5,529	73,500	1:00
Butte South	12.4	5,449	50,600	2:00
Butte North	17.0	5,371	36,600	3:05
Ramsay	21.4	5,293	30,600	3:55
Opportunity	25.4	5,180	26,800	4:35
Opportunity	30.9	5,006	21,800	6:25
Warm Springs	35.4	4,887	18,600	7:50
Warm Springs	39.9	4,744	15,900	9:50
Orofino Creek	44.8	4,647	12,700	11:50
Orofino Creek	48.8	4,566	11,400	13:30
Deer Lodge	55.2	4,486	10,300	15:50
Garrison **	59.7	4,446	9,053	17:50

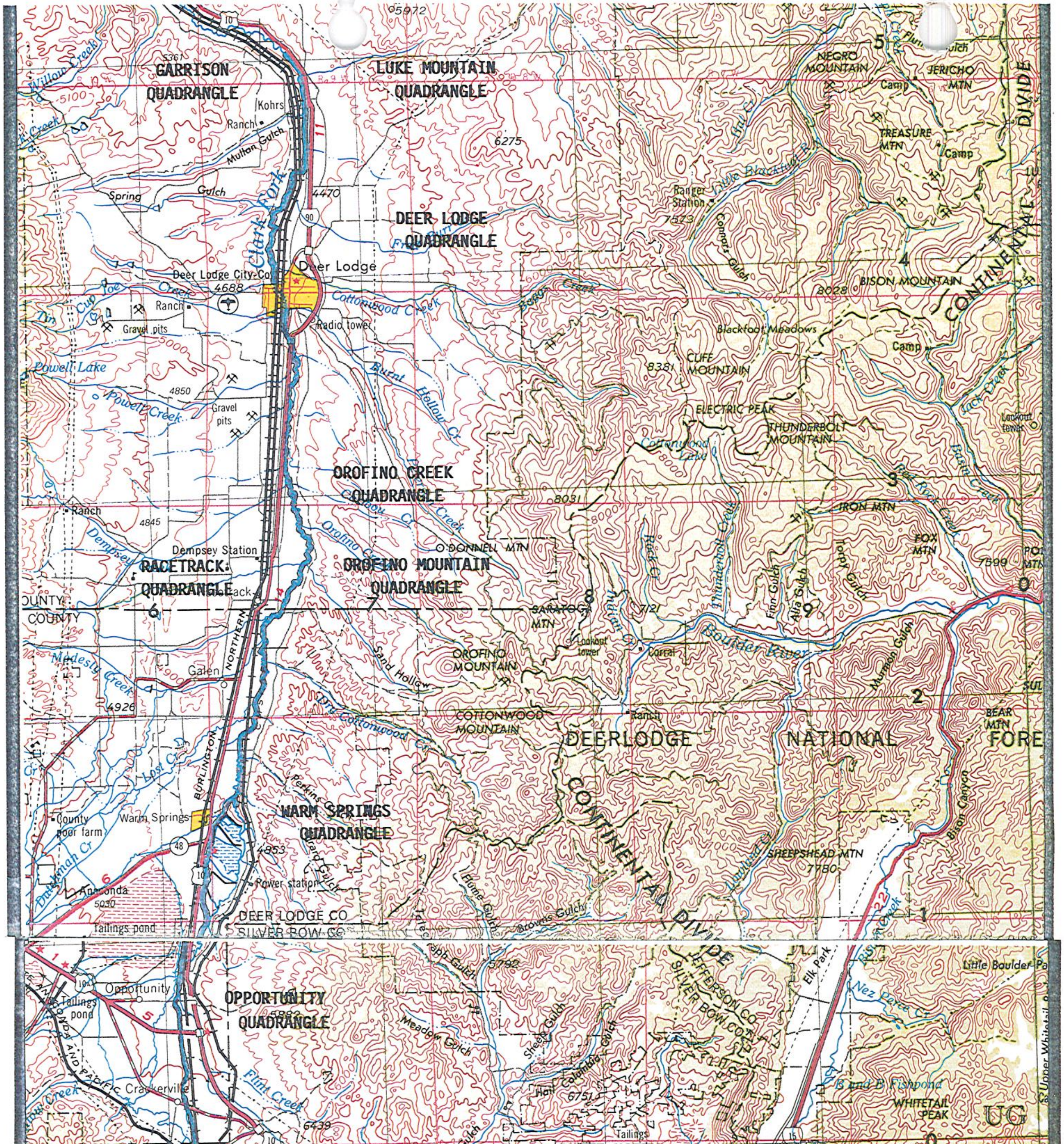
* NOTE: The **Time to Peak Discharge** is the time from when the maximum flow is moving through the breached dam until the maximum flow occurs at the specified distance downstream. **Substantial flooding, although it is not the maximum, will occur shortly before the specified time.**

** NOTE: At approximately 56 miles downstream of Basin Creek Reservoir, peak discharge is less than the 100-year discharge for Clark Fork.

CONCLUSIONS

1. General

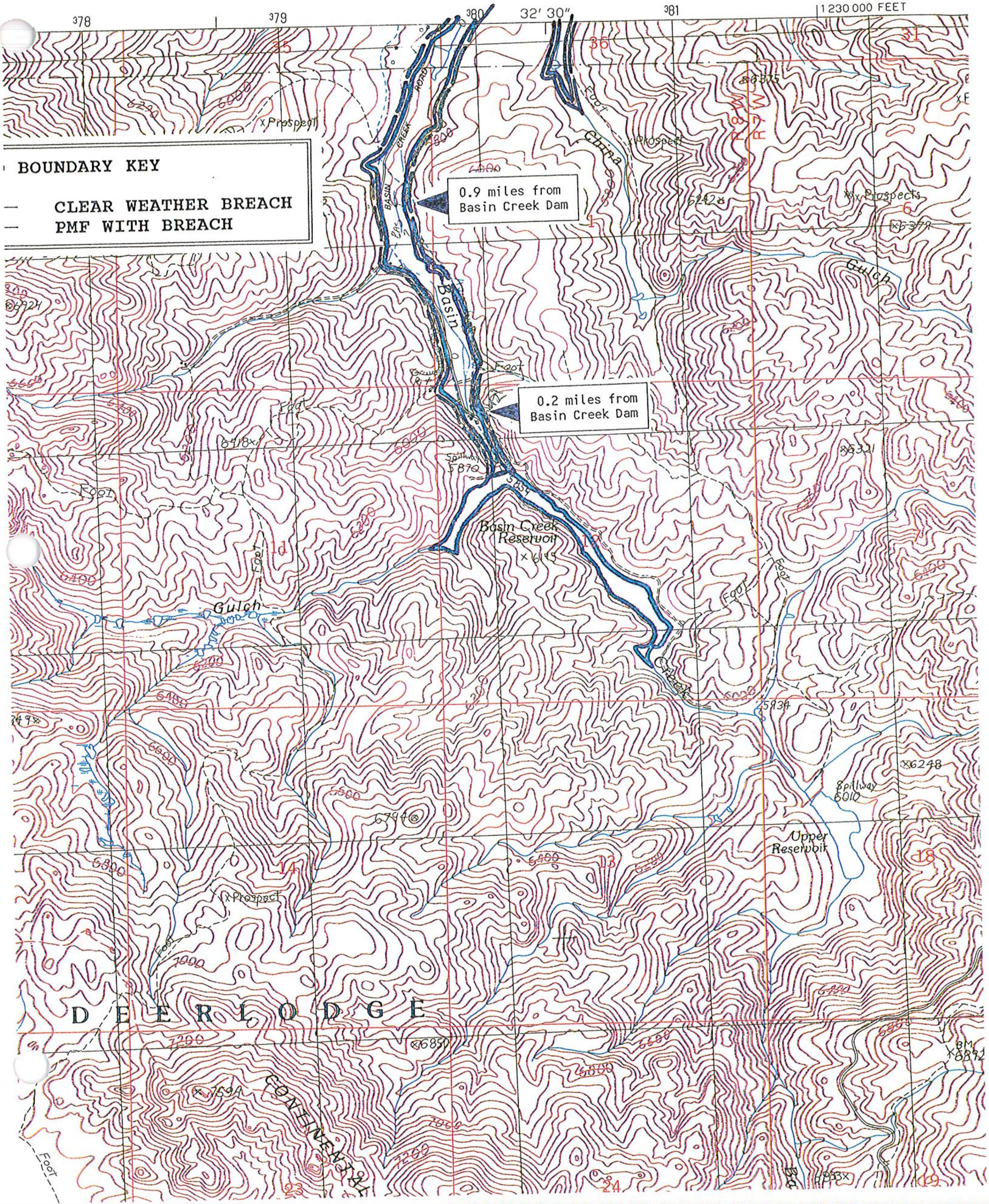
The HEC-1 program was used to determine flood hydrographs and rating curves from the dam breach flood waves for the area below Basin Creek Dam #1. These flood wave hydrographs are shown in Figures 3 and 4. From the HEC-1 output, water surface elevations were calculated and flood inundation mapping was prepared which identifies downstream hazard areas. The flood



GARRISON QUADRANGLE
LUKE MOUNTAIN QUADRANGLE
DEER LODGE QUADRANGLE
OROFINO CREEK QUADRANGLE
OROFINO MOUNTAIN QUADRANGLE
RACETRACK QUADRANGLE
WARM SPRINGS QUADRANGLE
OPPORTUNITY QUADRANGLE
Deer Lodge
Deer Lodge City-Co
Radio tower
Cottonwood Creek
Clark Fork
Kohrs Ranch
Mullan Gulch
Spring Gulch
Powell Lake
Powell Creek
Gravel pits
Dempsey Station
Galen
Warm Springs
County poor farm
Anaconda
Tailings pond
Opportunity
Crackerville
Power station
DEER LODGE CO
SILVER BOW CO
NORTHERN
BURLINGTON
Sand Hollow
Cottonwood Mountain
Orofino Mountain
O'Donnell Mtn
Saratoga Mtn
Boulder River
Thunderbolt Mountain
Electric Peak
Cliff Mountain
Blackfoot Meadows
Bison Mountain
Negro Mountain
Jericho Mtn
Treasure Mtn
Ranger Station
Connors Gulch
Iron Mtn
Fox Mtn
Finn Gulch
Alta Gulch
Torpy Gulch
Mormon Gulch
Sheepshead Mtn
Bison Canyon
Bear Mtn
DEERLODGE NATIONAL FORE
CONTINENTAL DIVIDE
JEFFERSON CO
SILVER BOW CO
Elk Park
Nez Perce Cr
Whitetail Peak
Little Boulder Pa
Flume Gulch
Browns Gulch
Telegraph Gulch
Meadow Gulch
Sheep Gulch
Columbia Gulch
Flint Creek
Dutchman Cr
Lost Cr
Modesty Creek

MOU

7.5 MI


BOUNDARY KEY
CLEAR WEATHER BREACH
PMF WITH BREACH
0.9 miles from
Basin Creek Dam
0.2 miles from
Basin Creek Dam
Basin Creek
Reservoir
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Spillway
6010
5934
Basin
China
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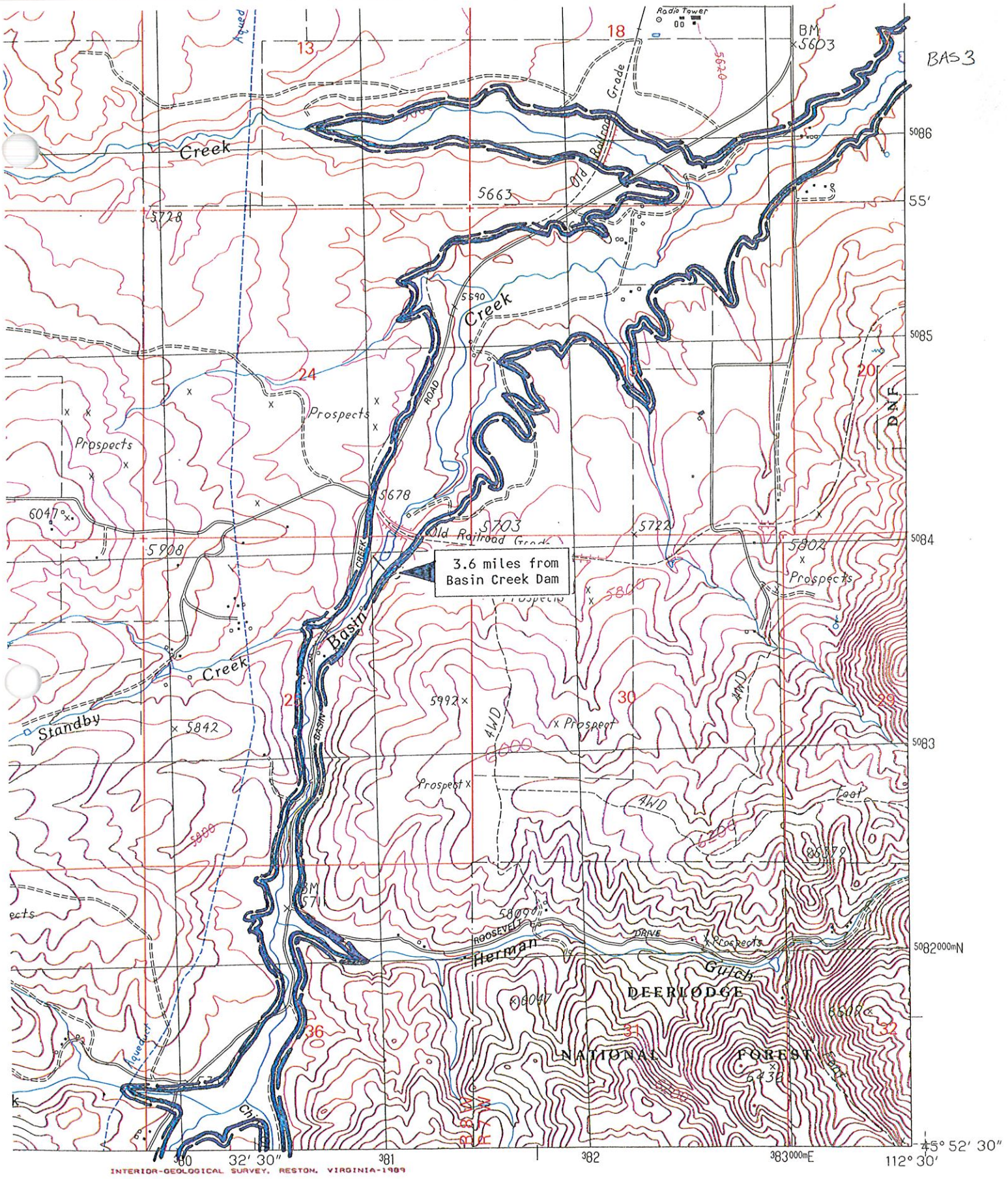

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MONTANA

QUADRANGLE LOCATION

1	2	3	1 Ramsay 2 Butte North 3 Elk Park Pass

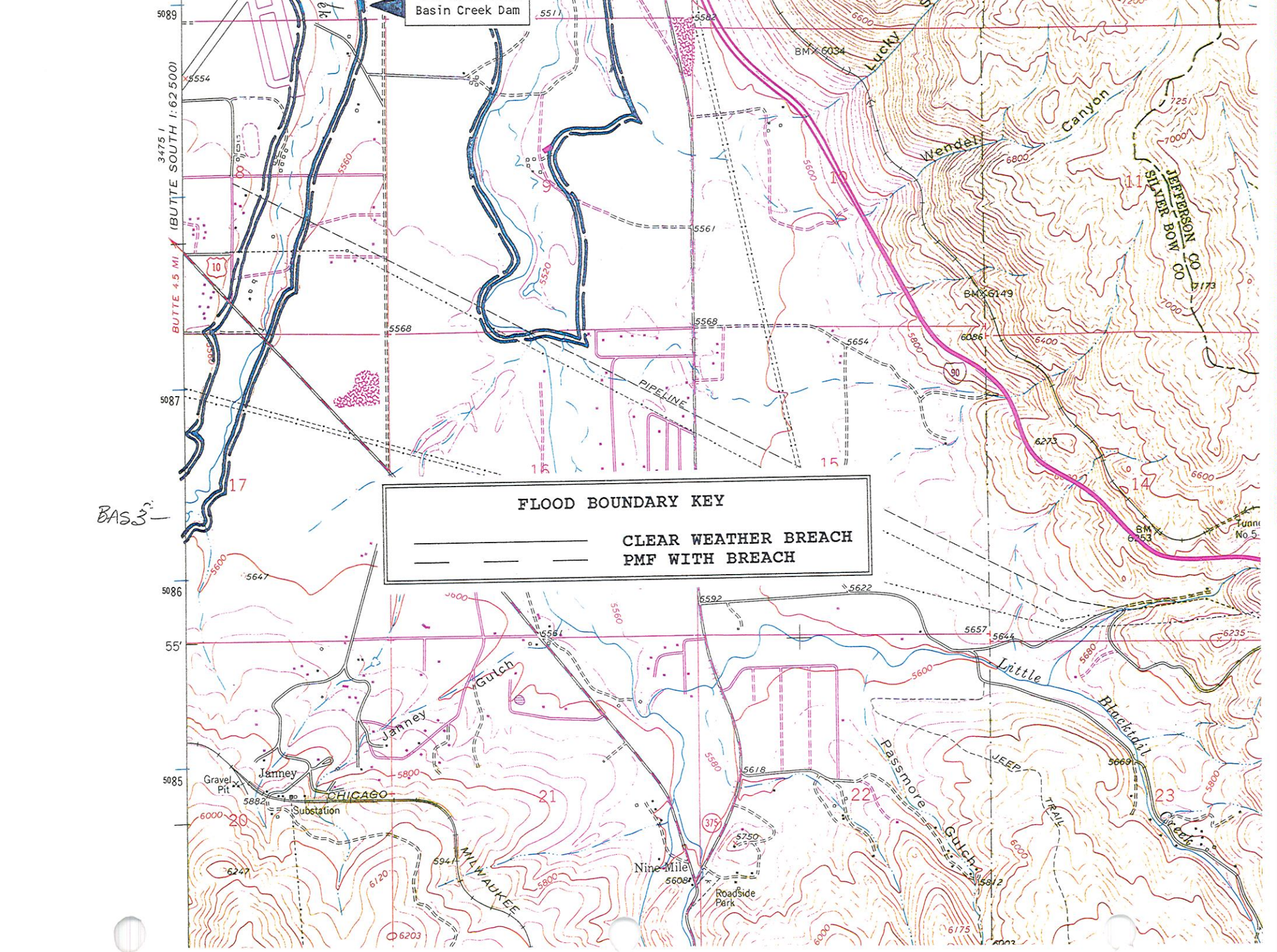
ROAD LEGEND

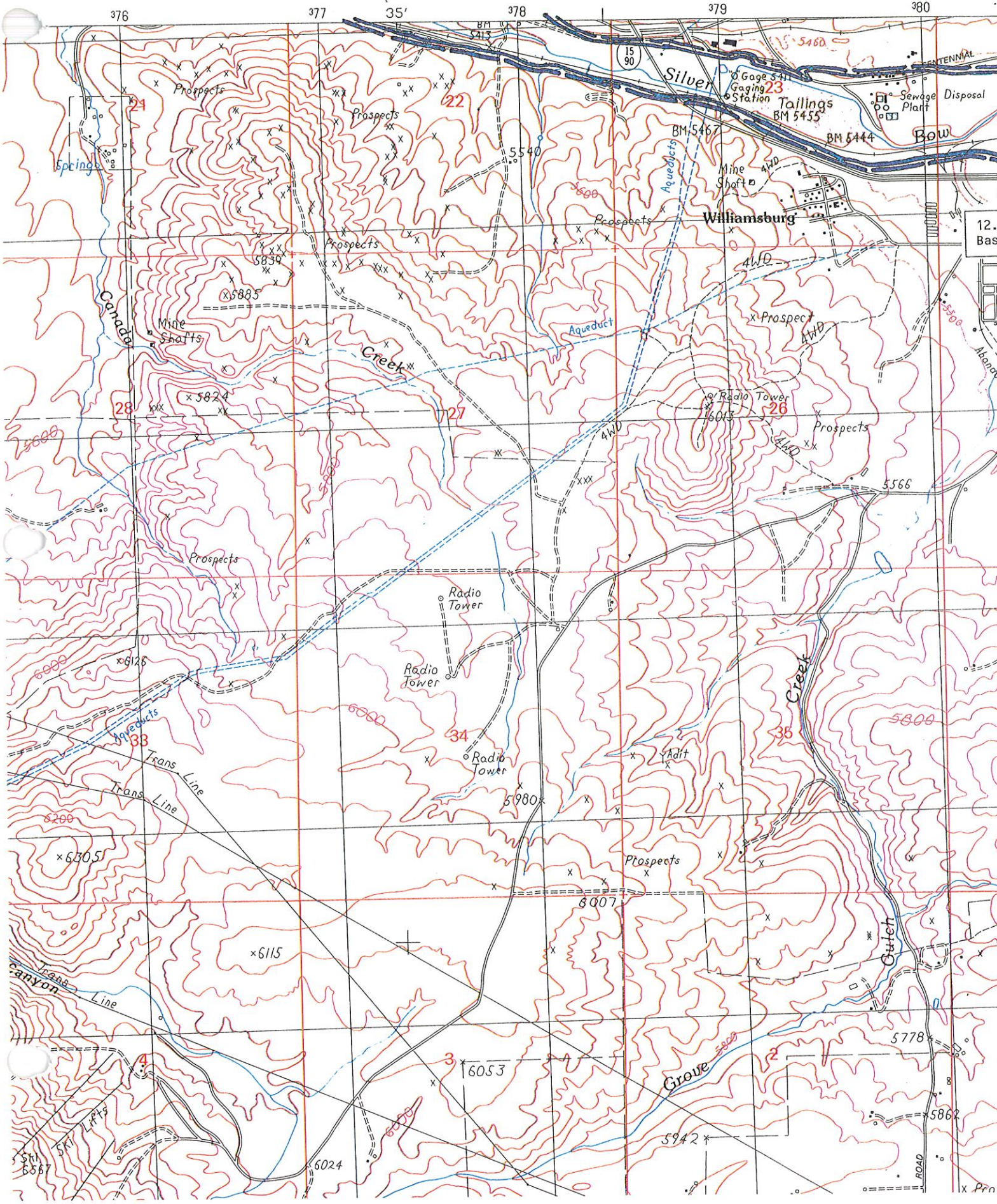
Improved Road . . . . . ═══

Unimproved Road . . . . . ========

Trail . . . . . ---------

Interstate Route U.S. Route State Route


Basin Creek Dam
FLOOD BOUNDARY KEY
CLEAR WEATHER BREACH
PMF WITH BREACH
BUTTE 4.5 MI
(BUTTE SOUTH 1:62500)
PIPELINE
Lucky Wendel Canyon
JEFFERSON CO
SILVER BOW CO
Janney Gulch
Janney
Gravel Pit
Substation
CHICAGO
MILWAUKEE
Nine Mile
Roadside Park
Passmore Gulch
Little Blacktail
JEEP TRAIL
Creek
BM 6034
BM 6149
BM 6253
Tunnel No 5
BAS3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BM 5413
15
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Silver
Gage 541
Gaging
Station
23
Tailings
BM 5455
BM 5467
BM 5444
Sewage Disposal
Plant
Bow
5460
CENTENNIAL
Springs
Prospects
21
22
5540
Aqueducts
Mine
Shaft
4WD
Williamsburg
5600
Prospects
5830
5885
Canada
Mine
Shafts
Creek
Aqueduct
Prospect
4WD
5824
28
27
Radio Tower
6013
26
Prospects
4WD
5566
5800
Prospects
Radio
Tower
6125
Radio
Tower
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ROAD

DUCED BY THE UNITED STATES GEOLOGICAL SURVEY
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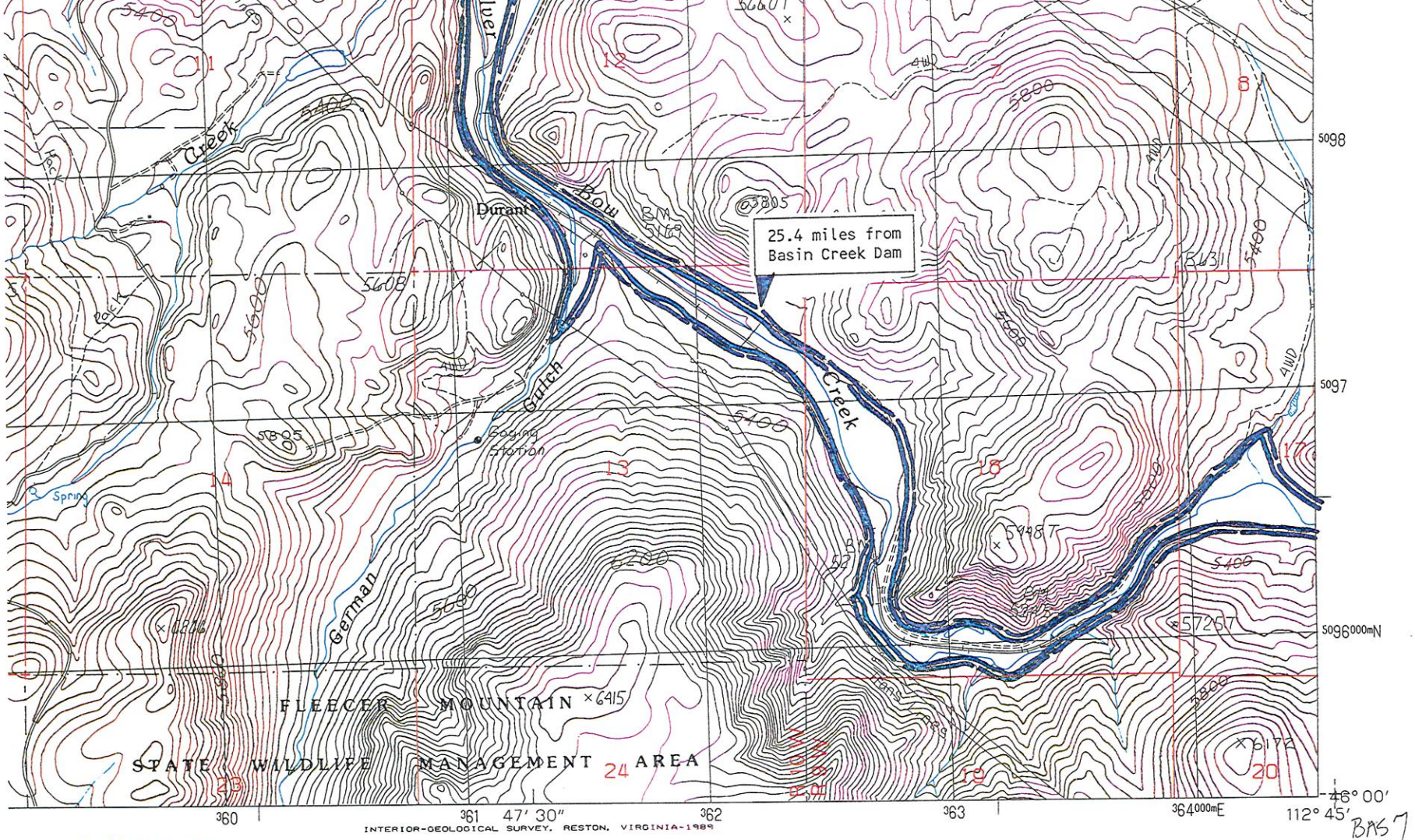

SCALE 1:24 000

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CONTOUR INTERVAL 40 FEET

To convert feet to meters multiply by .3048
To convert meters to feet multiply by 3.2808

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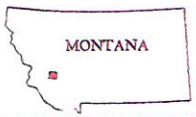
OR RESTON, VIRGINIA 22092



QUADRANGLE LOCATION

1	2	3	1 Anaconda North 2 Warm Springs 3 Orofino Mountain 4 Anaconda South 5 Ramsay 6 Dickie Peak 7 Burnt Mountain 8 Buxton
4		5	
6	7	8	

ADJOINING 7.5' QUADRANGLE NAMES

ROAD LEGEND

Improved Road . . . . . ═══
Unimproved Road . . . . . ========
Trail . . . . . ---------

Interstate Route U.S. Route State Route

OPPORTUNITY, MONTANA

PROVISIONAL EDITION 1989

46112-A7-TF-024

BAS 7

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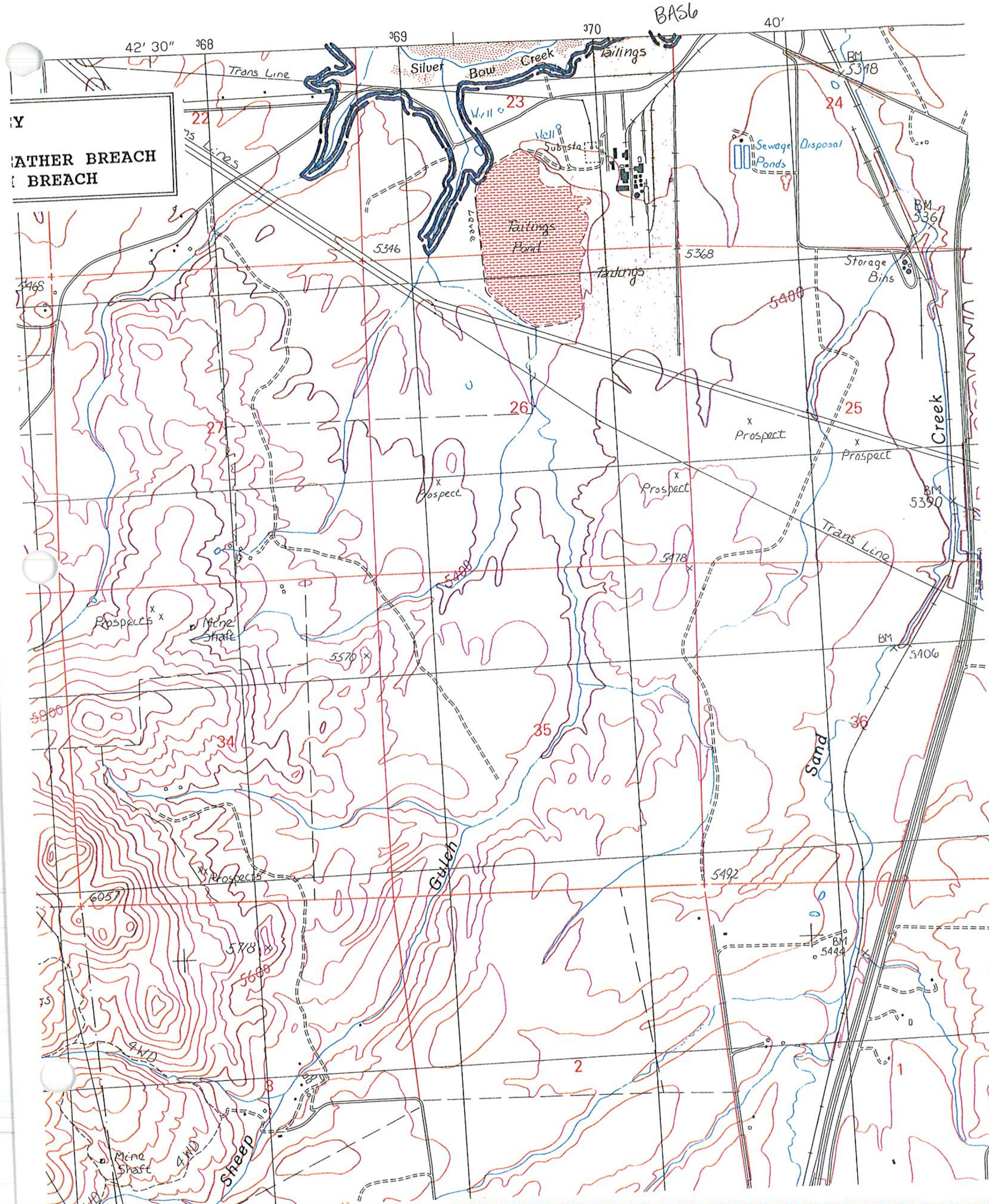
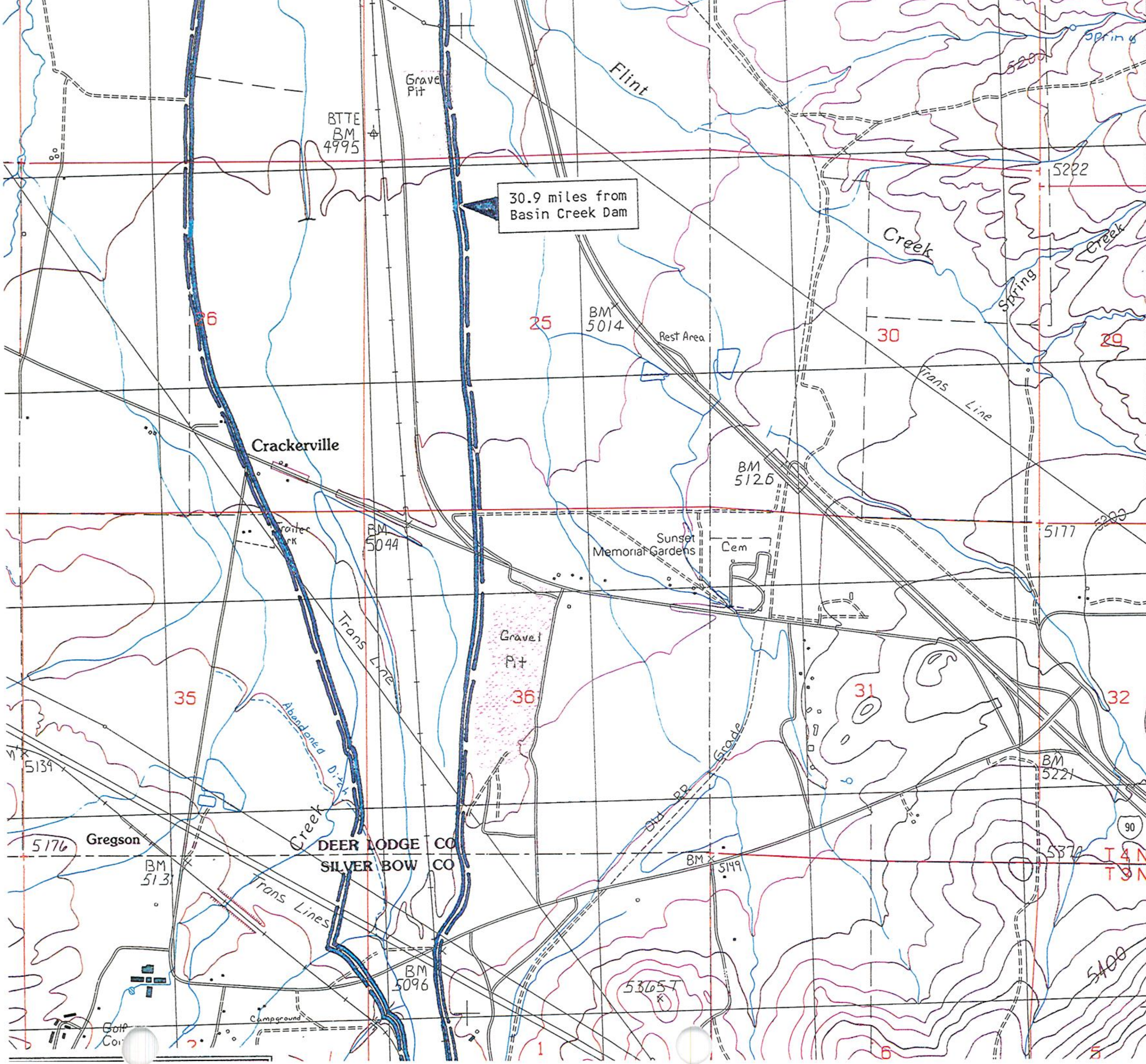
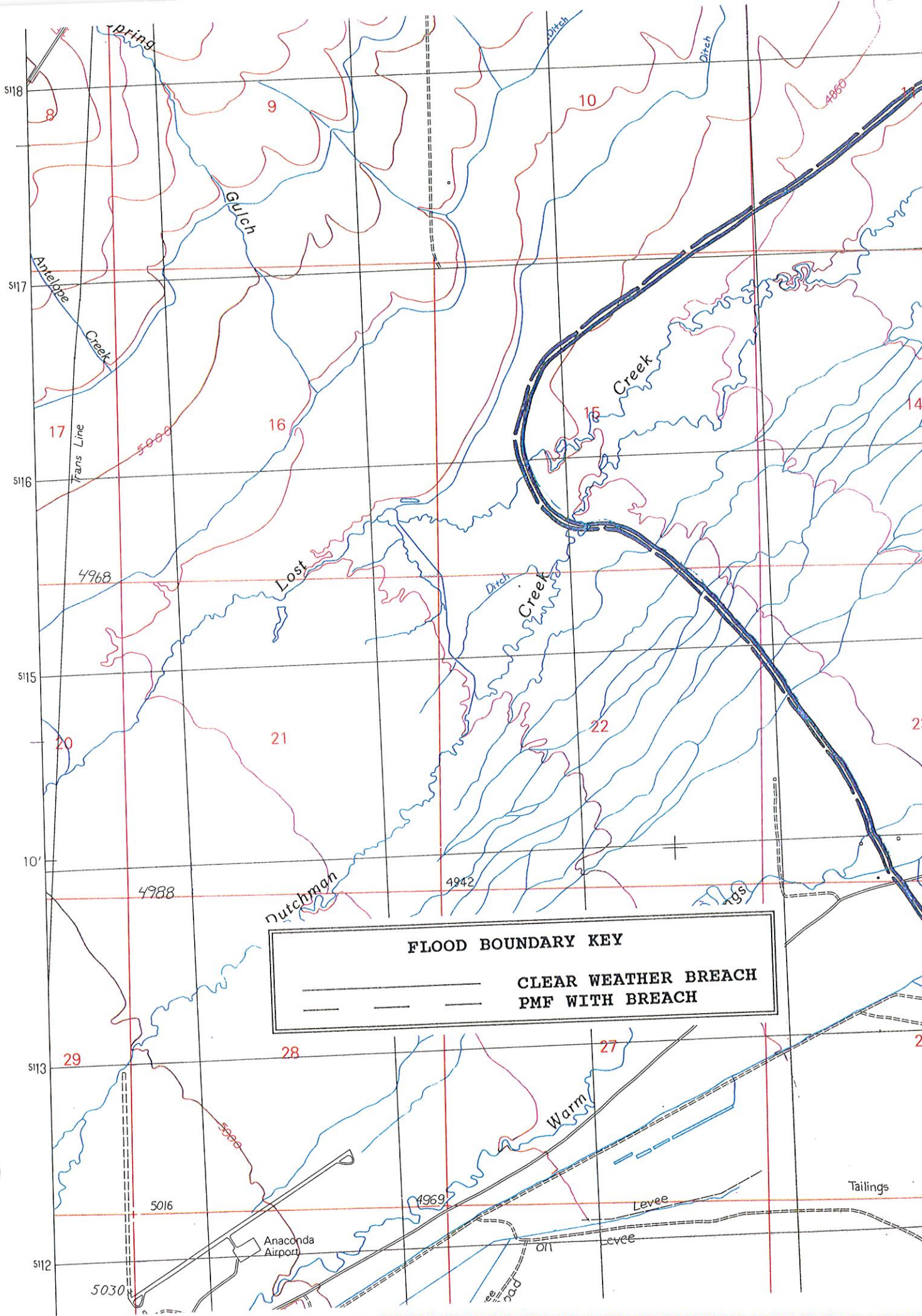
MPILED FROM AERIAL PHOTOGRAPHS TAKEN 1954-1956
HECKED 1959
REVISION FROM AERIAL PHOTOGRAPHS TAKEN 1986
LD CHECKED . . . . . 1987 MAP EDITED 1989
OJECTION . . . . . LAMBERT CONFORMAL CONIC
ID: 1000-METER UNIVERSAL TRANSVERSE MERCATOR . . . . . ZONE 12
10,000-FOOT STATE GRID TICKS . . . . . MONTANA, SOUTH ZONE
M GRID DECLINATION . . . . . 1°13' WEST
9 MAGNETIC NORTH DECLINATION . . . . . 16°30' EAST
RTICAL DATUM . . . . . NATIONAL GEODETIC VERTICAL DATUM OF 1929
RIZONTAL DATUM . . . . . 1927 NORTH AMERICAN DATUM
place on the predicted North American Datum of 1983,
ove the projection lines as shown by dashed corner ticks

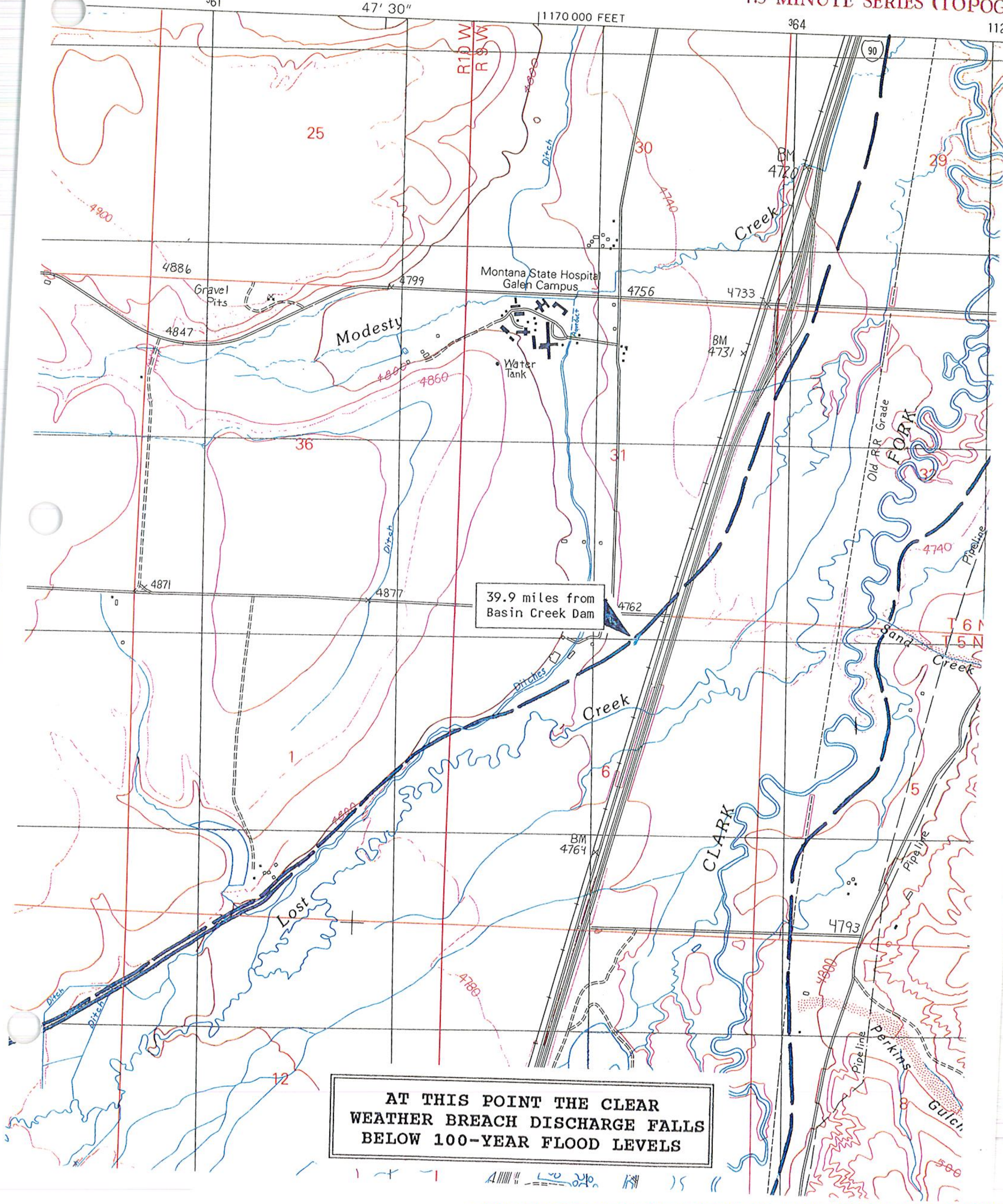
PROVISIONAL MAP
Produced from original manuscript drawings. Infor-


BAS6
42' 30"
368
369
370
40'
Y
ATHER BREACH
BREACH
Trans Line
Silver Bow Creek
Tailings
Well
Well
Substa
Sewage Disposal Ponds
Tailings Pond
Levee
Tailings
Storage Bins
BM 5348
BM 5361
BM 5390
BM 5406
BM 5444
5346
5368
5400
5468
5478
5408
5570
5492
5800
6057
5718
5600
Prospect
Prospect
Prospect
Prospect
Prospects
Prospects
Mine Shaft
Mine Shaft
Trans Line
Creek
Sand
Gulch
Sheep
4WD
4WD
22
23
24
25
26
27
34
35
36
1
2
3


30.9 miles from
Basin Creek Dam
Crackerville
Gregson
DEER LODGE CO
SILVER BOW CO
Flint Creek
Spring Creek
Trans Line
Trans Lines
Abandoned Ditch
Creek
Gravel Pit
BTTE BM 4995
BM 5014
BM 5044
BM 5126
BM 5096
BM 5131
BM 5149
BM 5221
Rest Area
Sunset Memorial Gardens
Cem
Old RR Grade
Trailer Park
Campground
5176
5139
5222
5177
5200
5370
5365 T
5400
26
25
30
29
35
36
31
32
1
6
5
T 4 N
T 3 N
90
5104
5103
5102
5101
2' 30"

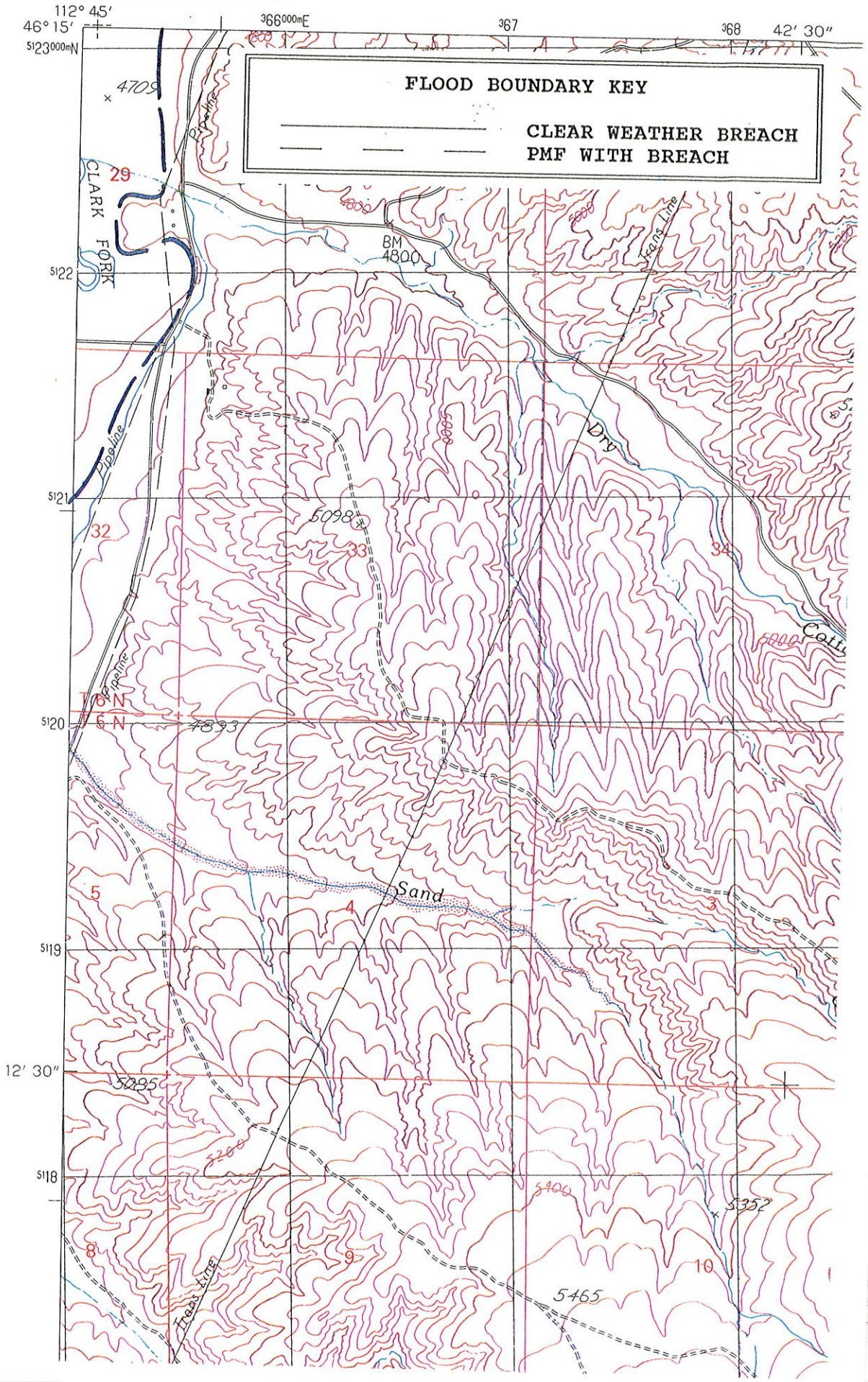

Spring
Gulch
Antelope Creek
Trans Line
Ditch
Ditch
Creek
Lost Creek
Ditch
Dutchman
Warm
Levee
Levee
Tailings
Anaconda Airport
FLOOD BOUNDARY KEY
CLEAR WEATHER BREACH
PMF WITH BREACH
8
9
10
16
17
21
22
27
28
29
5118
5117
5116
5115
5113
5112
4968
4988
4942
5000
5000
5016
4969
5030

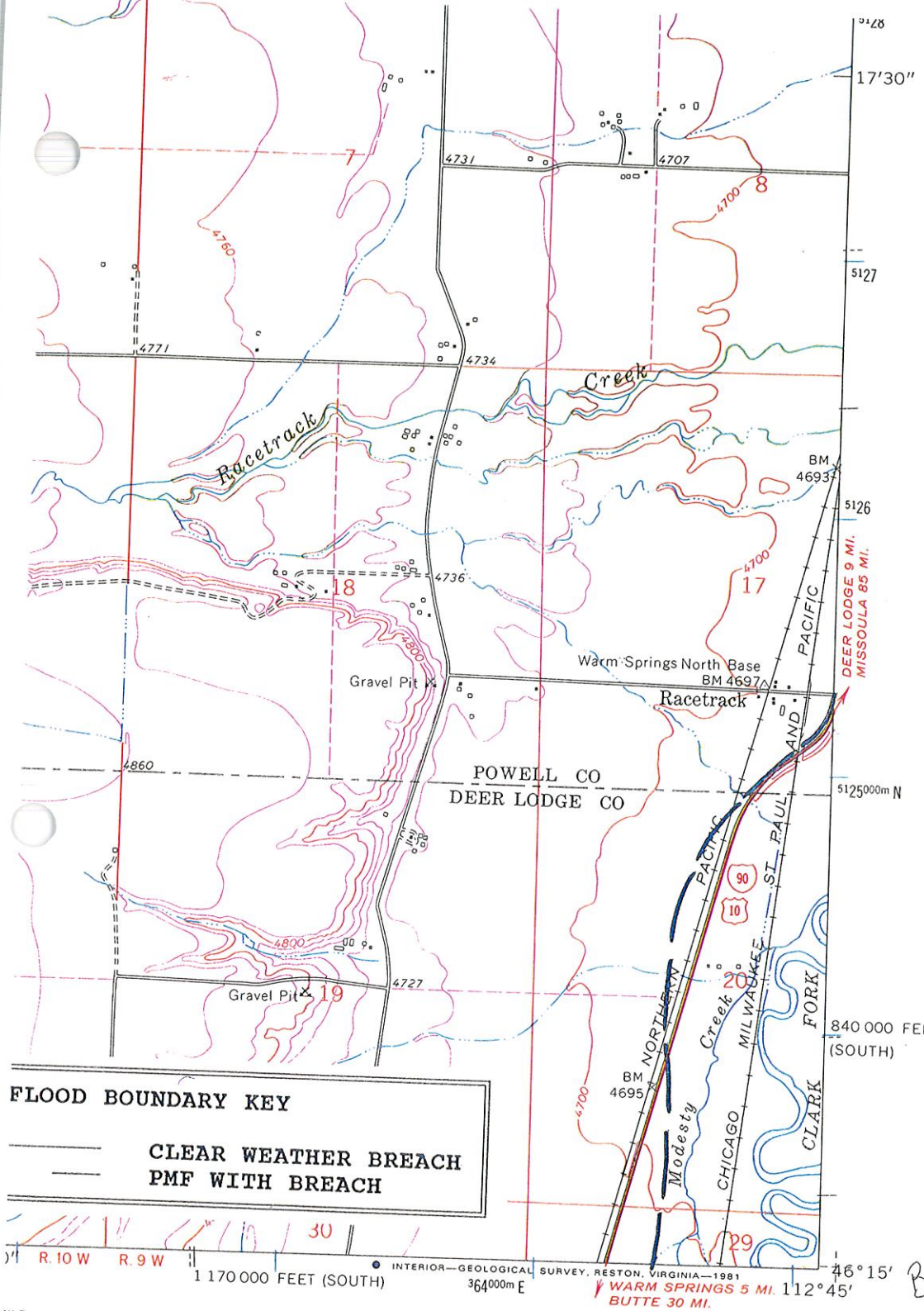
WARM SPRINGS QUADRA
MONTANA
7.5 MINUTE SERIES (TOPOG



UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

BAS11





FLOOD BOUNDARY KEY

CLEAR WEATHER BREACH

PMF WITH BREACH

BAS 11

ROAD CLASSIFICATION

Heavy-duty ——— Light-duty ———

Unimproved dirt ========

Interstate Route U. S. Route

QUADRANGLE LOCATION

(BUTTE NORTH 3476 II 1:62 500)

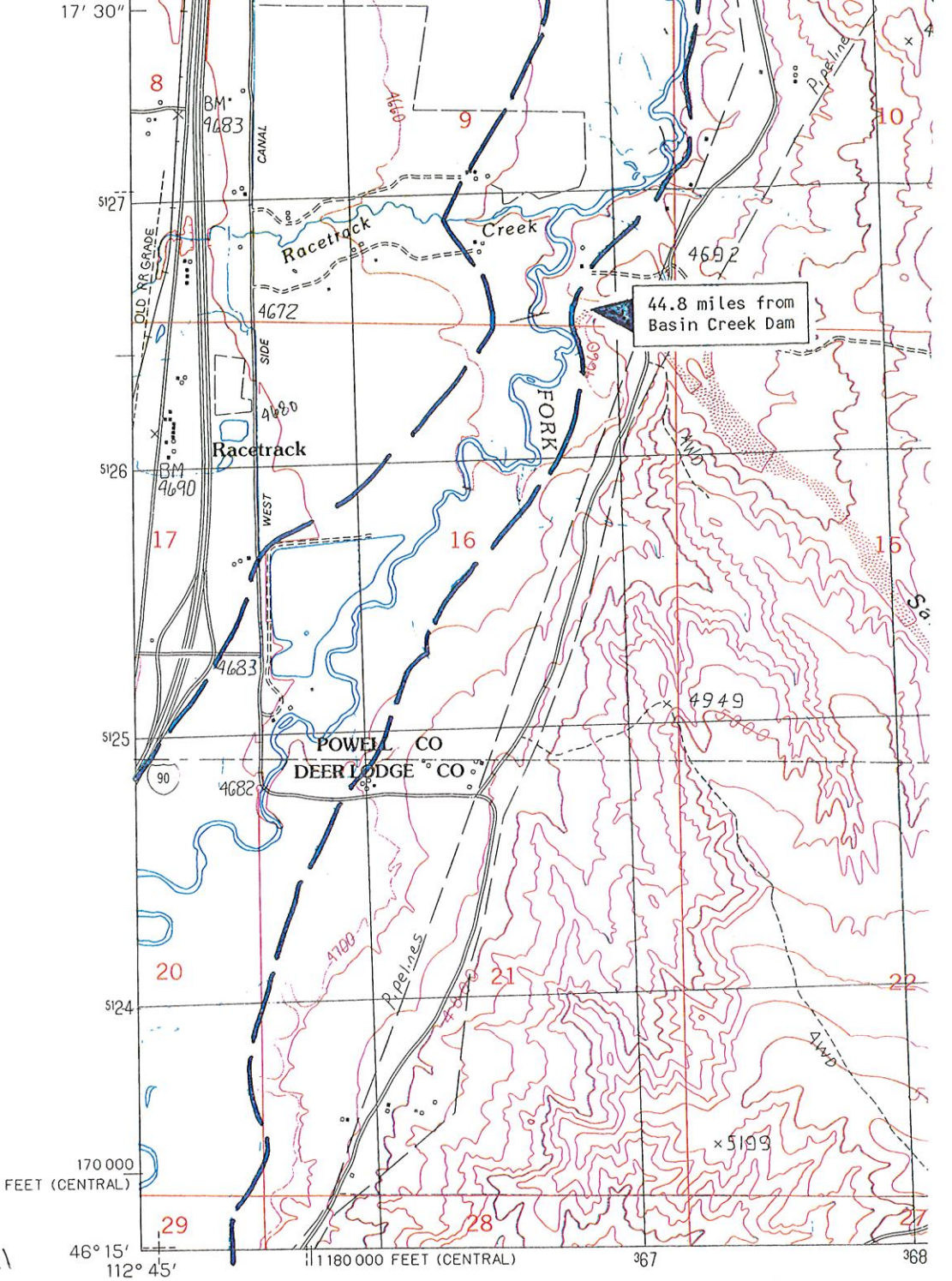
RACETRACK, MONT.

N4615—W11245/7.5

1967

PHOTOINSPECTED 1976

DMA 3476 IV SE—SERIES V894



BPEJ 11

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CONTROL BY . . . . . USGS, NOS/NOAA
COMPILED FROM AERIAL PHOTOGRAPHS TAKEN 1954-1955
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LIMITED REVISION FROM AERIAL PHOTOGRAPHS TAKEN 1985
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GRID: 1000-METER UNIVERSAL TRANSVERSE MERCATOR . . . . . ZONE 12
10,000-FOOT STATE GRID TICKS . . . . . MONTANA, CENTRAL ZONE
MONTANA, SOUTH ZONE
UTM GRID DECLINATION . . . . . 1°13' WEST
1989 MAGNETIC NORTH DECLINATION . . . . . 16°30' EAST
VERTICAL DATUM . . . . . NATIONAL GEODETIC VERTICAL DATUM OF 1929
HORIZONTAL DATUM . . . . . 1927 NORTH AMERICAN DATUM

To place on the predicted North American Datum of 1983, move the projection lines as shown by dashed corner ticks (11 meters north and 67 meters east)

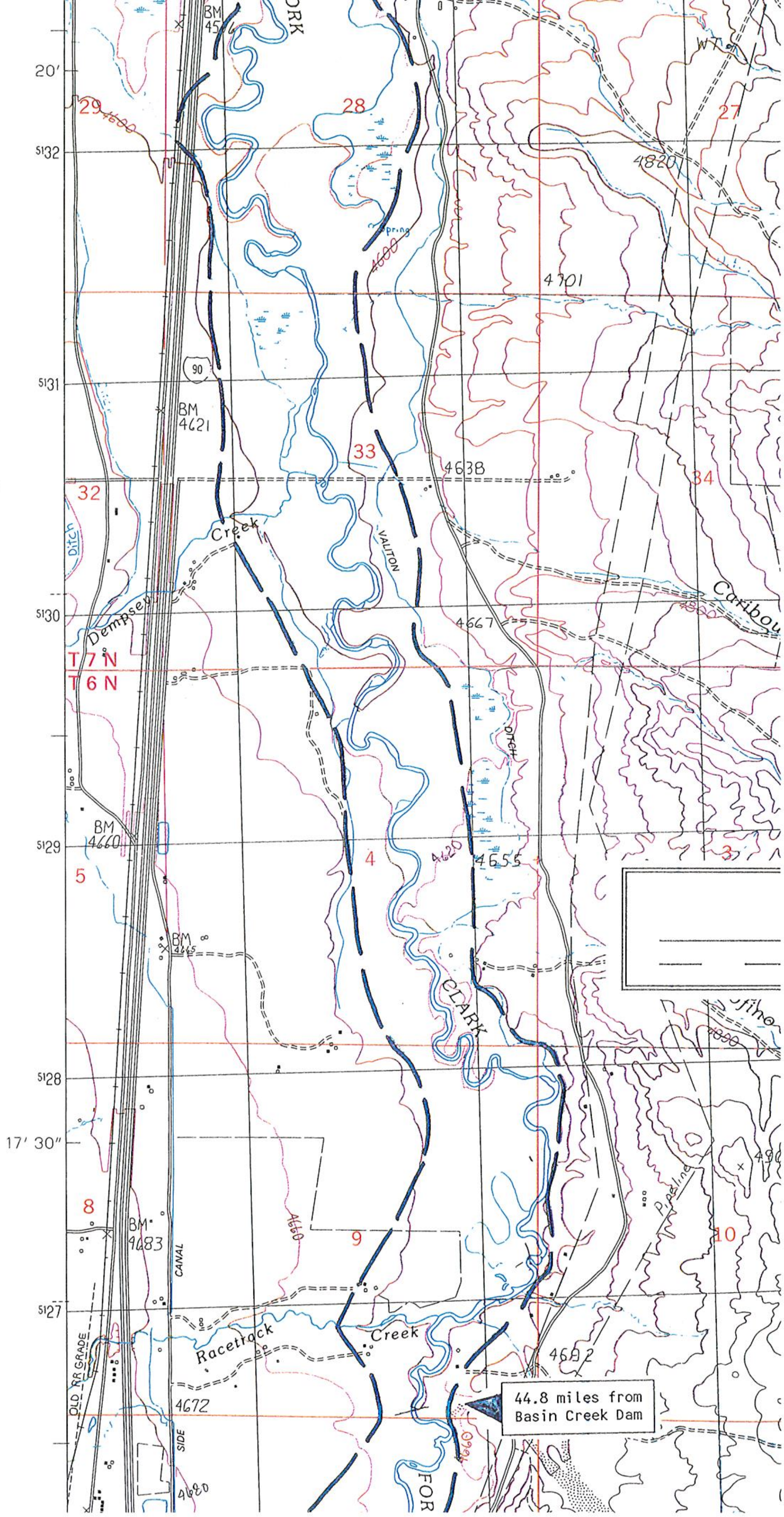
There may be private inholdings within the boundaries of any Federal and State Reservations shown on this map

Public Land Survey System is shown as published in 1959 and verified or supplemented in 1987

PROVISIONAL MAP
Produced from original manuscript drawings. Information shown as of date of field check.

T

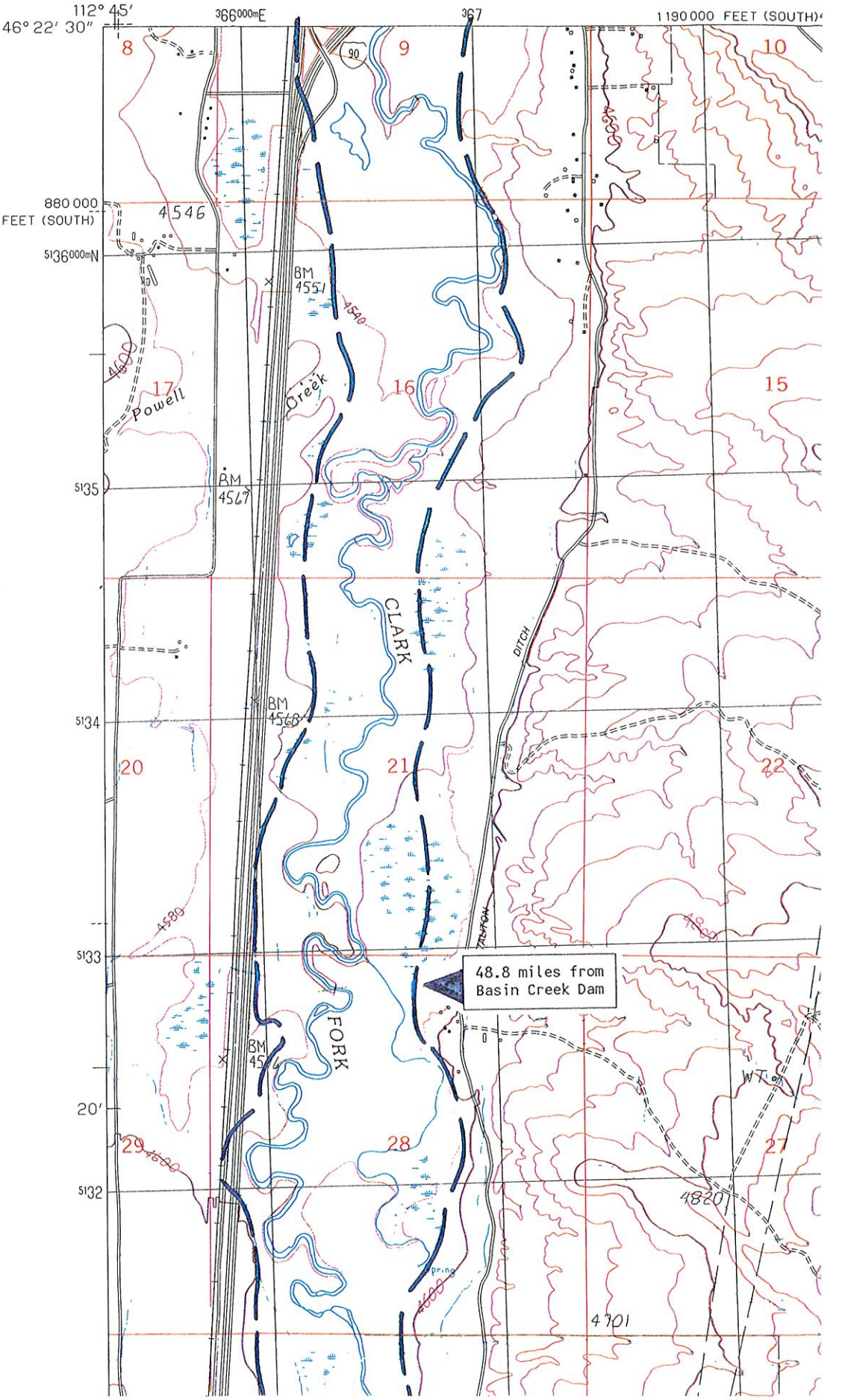
BAS12

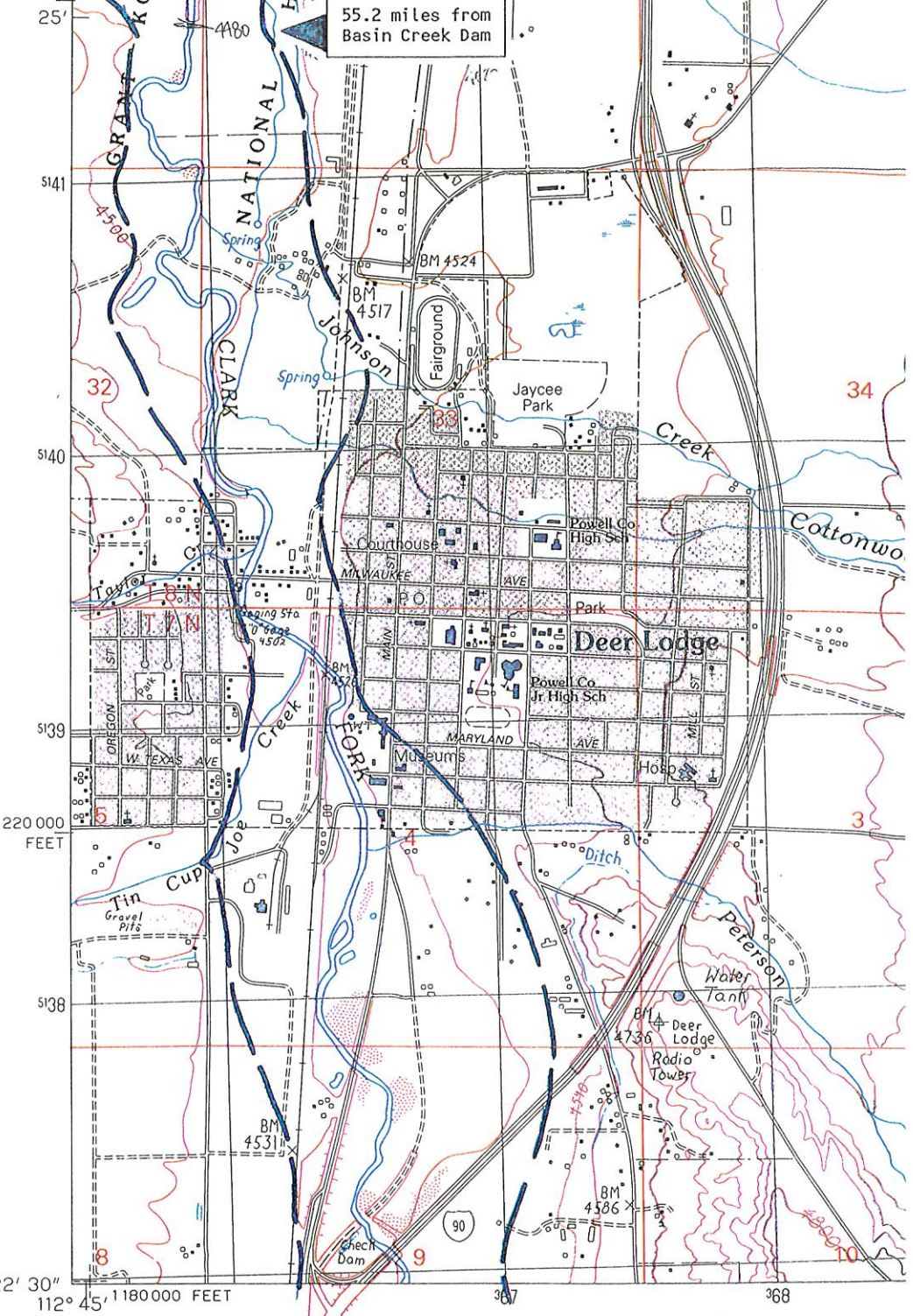


20'
5132
5131
5130
5129
5128
17' 30"
5127
29
28
27
4820
Spring
4600
4701
90
BM
4621
33
4638
32
34
Ditch
Creek
VALTON
Dempsey
Caribou
4667
T 7 N
T 6 N
DITCH
BM
4660
4
4620
4655
3
5
BM
4665
CLARK
8
BM
4683
4660
9
10
CANAL
Pipeline
Racetrack
Creek
4692
OLD RR GRADE
4672
SIDE
4680
FORK
44.8 miles from
Basin Creek Dam

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

BASIN





BMS 13 46° 22' 30"
112° 45'

PRODUCED BY THE UNITED STATES GEOLOGICAL SURVEY
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UTM GRID DECLINATION . . . . . 1°13' WEST
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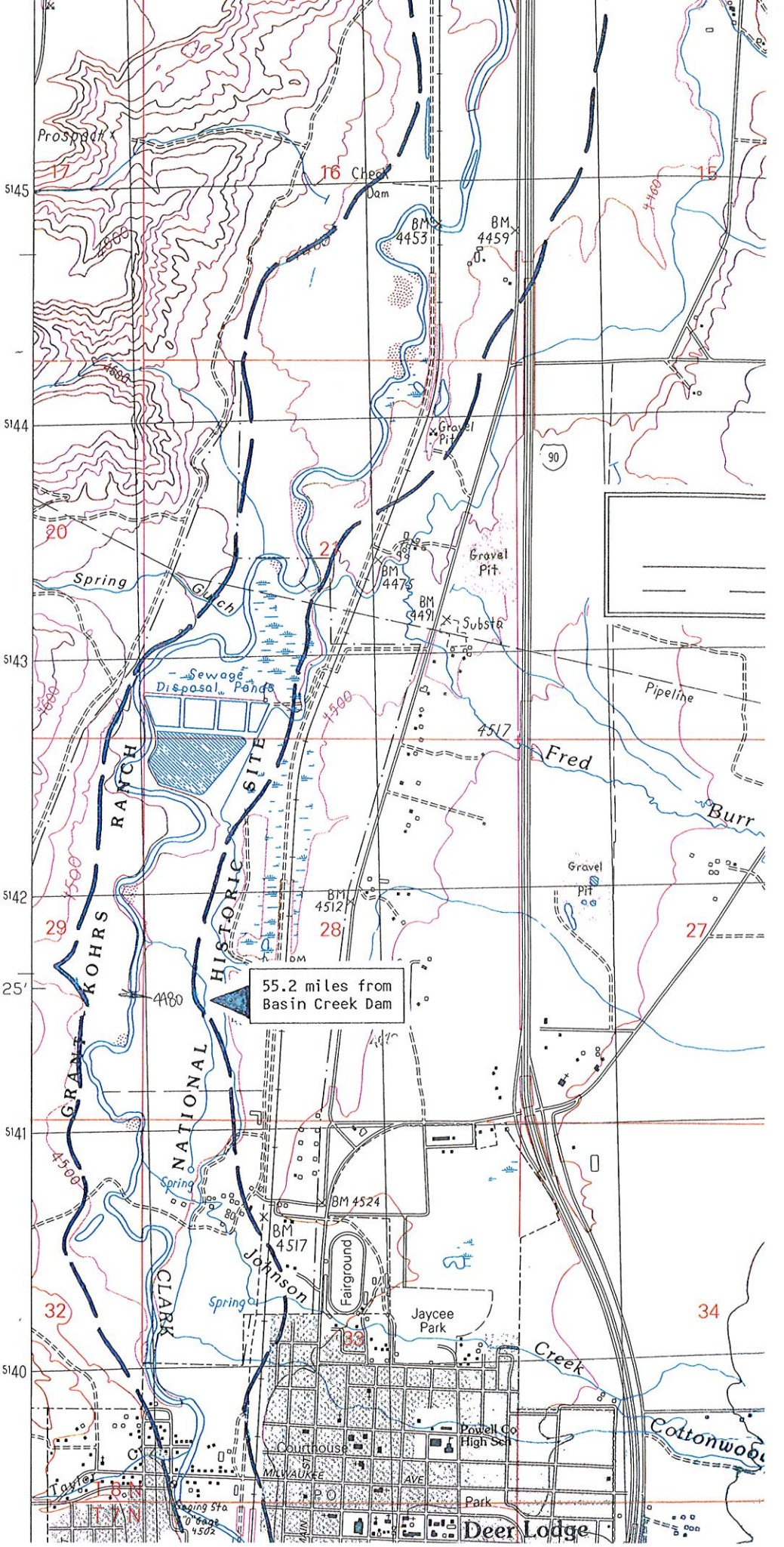
Public Land Survey System is shown as published in 1959 and verified or supplemented in 1987

Gray tint indicates areas in which selected buildings are shown

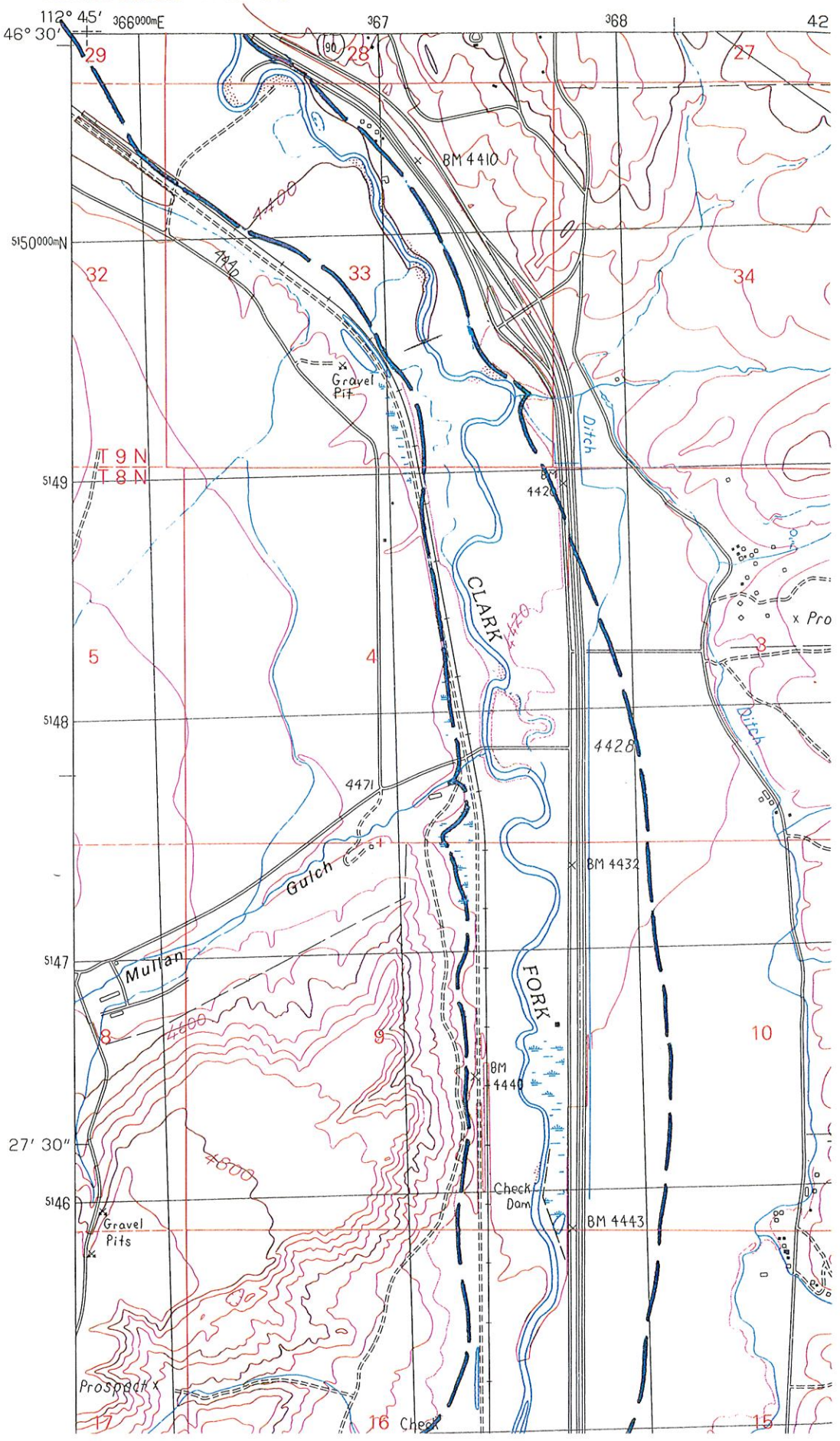
NORTH

PROVISIONAL MAP
Produced from original manuscript drawings. Information shown as of date of field check.
T


Prospect
Check Dam
BM 4453
BM 4459
Gravel Pit
Spring Gulch
BM 4475
BM 4491
Substa
Sewage Disposal Ponds
Pipeline
4517
Fred Burr
GRANT KOHRS RANCH NATIONAL HISTORIC SITE
BM 4512
55.2 miles from Basin Creek Dam
Spring
BM 4524
BM 4517
Johnson
Fairground
Jaycee Park
Creek
Cottonwood
Powell Co High Sch
Courthouse
MILWAUKEE AVE
P.O.
Park
Deer Lodge
Taylor
T8N
T7N
17
16
15
20
21
29
28
27
32
33
34
5145
5144
5143
5142
5141
5140
90

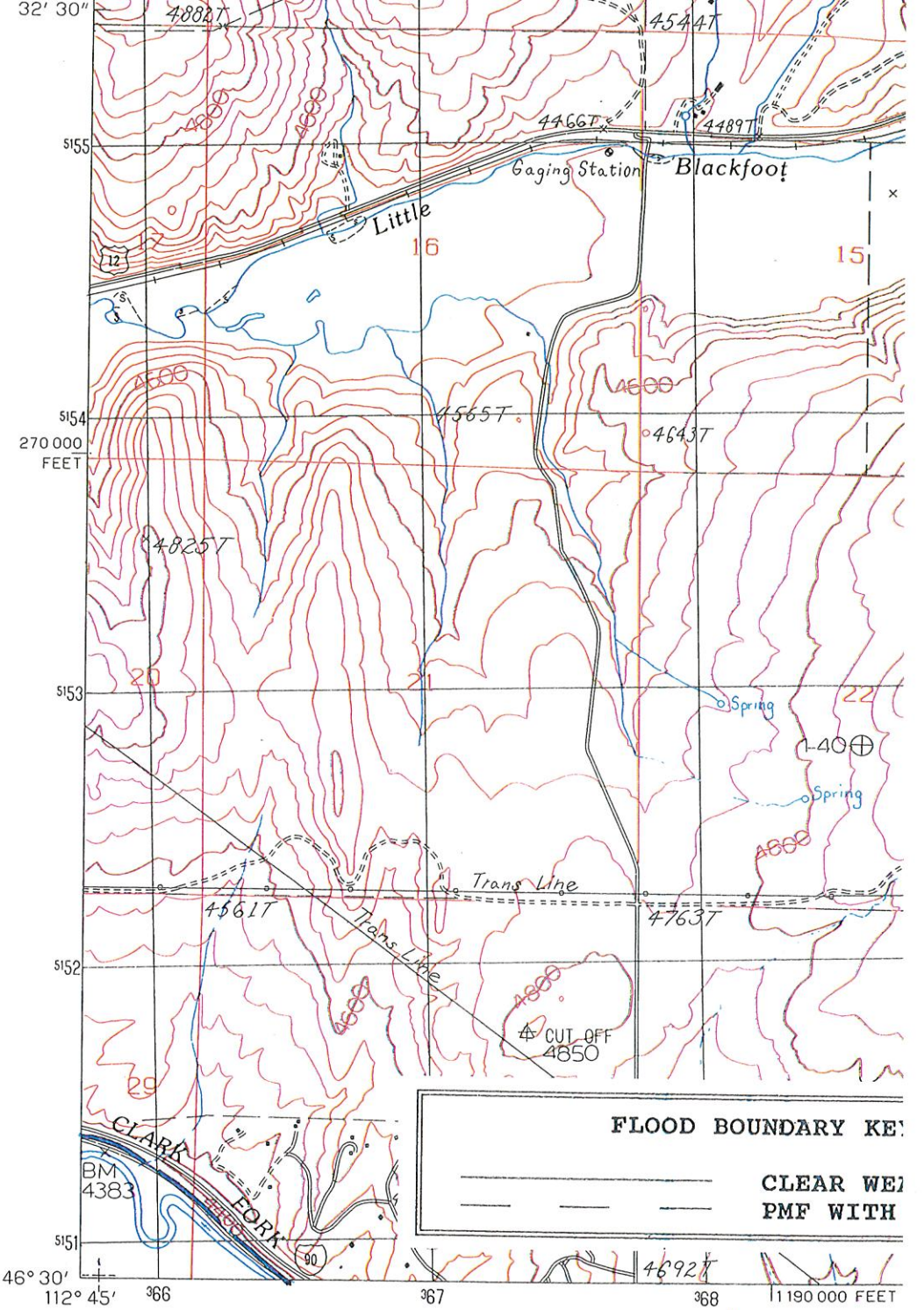
12

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY



BAS 14

100 yr flood limit.



PRODUCED BY THE UNITED STATES GEOLOGICAL SURVEY
CONTROL BY . . . . . USGS, NOS/NOAA
COMPILED FROM AERIAL PHOTOGRAPHS TAKEN 1984
FIELD CHECKED . . . . . 1985 MAP EDITED 1989
PROJECTION . . . . . LAMBERT CONFORMAL CONIC
GRID: 1000-METER UNIVERSAL TRANSVERSE MERCATOR . . . . . ZONE 12
10,000-FOOT STATE GRID TICKS . . . . . MONTANA, CENTRAL ZONE
UTM GRID DECLINATION . . . . . 1°14' WEST
1989 MAGNETIC NORTH DECLINATION . . . . . 16°30' EAST
VERTICAL DATUM . . . . . NATIONAL GEODETIC VERTICAL DATUM OF 1929
HORIZONTAL DATUM . . . . . 1927 NORTH AMERICAN DATUM

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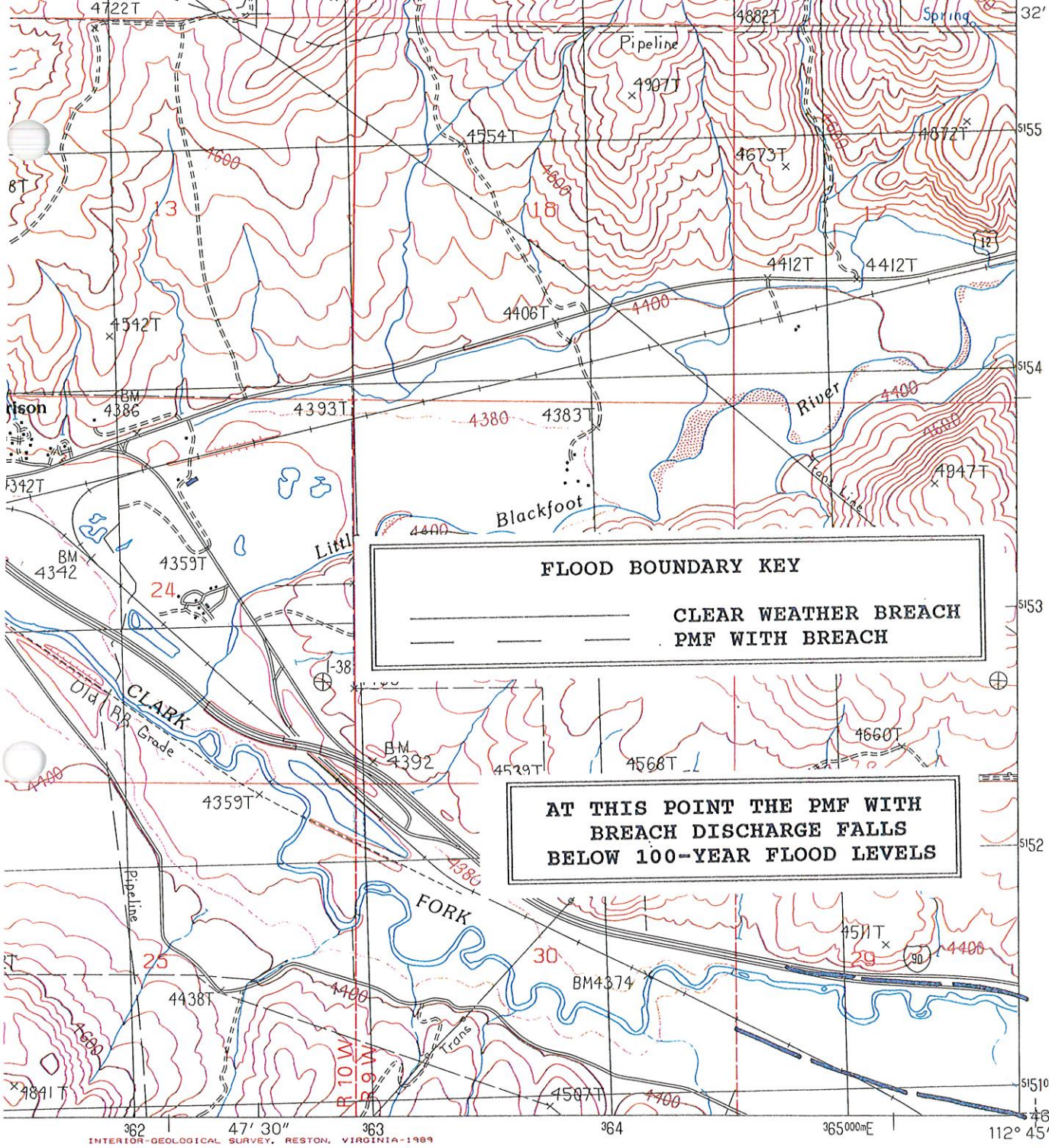
No distinction made between houses, barns, and other buildings

NORTH

PROVISIONAL MAP
Produced from original manuscript drawings. Information shown as of date of photography.



BASIS

2
0 2000
1
7000 8000 9000 10000

20 FEET

ACY STANDARDS
, COLORADO 80225

MONTANA

QUADRANGLE LOCATION

1	2	3	1 Bailey Mountain 2 Windy Rock 3 Gravely Mountain
4		5	4 Griffin Creek 5 Luke Mountain 6 Rock Creek Lake
6	7	8	7 Conleys Lake 8 Deer Lodge

ADJOINING 7.5' QUADRANGLE NAMES

ROAD LEGEND

Improved Road . . . . . ═══
Unimproved Road . . . . . ========
Trail . . . . . ---------

Interstate Route U.S. Route State Route

GARRISON, MONTANA
PROVISIONAL EDITION 1989

46112-E7-TF-024

APPENDIX C

TELEPHONE DIRECTORY

Telephone Directory

A. Priority One

1. EMERGENCY NUMBER 911

   SHERIFF Silver Bow County ..... 911 or (9:00 A.M. - 5:00 P.M.) (406) 497-1120 Ext. 1

2. DISASTER AND EMERGENCY SERVICES

   Silver Bow County ..... Office: (406) 497-6295

   EMERGENCY NUMBER 911

   Mr. Roger Ebner ..... Home: (406) 723-2084

   ..... Cel: (406) 490-5782

   Montana Disaster and Emergency Services Division (Helena) ..... (406) 841-3911

3. EVACUEES (in upstream-to-downstream sequence)

   Basin Creek Residents in the flood plane area.

   a. Marty Hovan (**Reservoir Operator** - 670 Basin Creek Rd) ..... (406) 494-1775
   b. Griff Davidson (634 Basin Creek Rd) ..... (406) 494-1312
   c. Vacant (622 Basin Creek Rd) ..... (406) xxx-xxxx
   d. Vacant/Removed (621 Basin Creek Rd) ..... (406) xxx-xxxx
   e. Ralph Stodden (551 Basin Creek Rd) ..... (406) 494-4402
   f. Wayne & Sandy Stodden (541 Basin Creek Rd) ..... (406) 494-1521
   g. Nick & Judy Digiovine (245 Two Bit Rd) ..... (406) 494-1591
   h. Jerry Piazzola (498 Basin Creek Rd) ..... (406) 494-1227
   i. Kevin & Stacy Anderson (382 Basin Creek Rd) ..... (406) -782-4288
   j. Jim Leary (381 Basin Creek Rd) ..... (406) 494-1396
   k. Norma Anderson (373 Basin Creek Rd) ..... (406) 533-0064
   l. Gary Wold (372 Basin Creek Rd) ..... (406) 782-6371
   m. Norma Anderson (371 Basin Creek Rd) ..... (406) 533-0064
   n. Robert Neill (361 Basin Creek Rd) ..... (406) 494-4411
   o. James Kissock (1179 Beacon Rd) ..... (406) 494-2612
   p. Bill Gozden (319 Black Angus Ln) ..... Unlisted
   q. Robert McDermott (515 Beacon Rd) ..... (406) 494-4158

r. John McDermott (203 Black Angus Ln)..... (406) 494-1116
s. Terry Kivela (50 Apple Orchard Ln) ..... (406) 723-8533
t. Harvey & Sue Ellen Robertson (54 Apple Orchard Ln)..... (406) 494-3114
u. Krag &Wetonia Filius (101 Beaver Pond)..... (406) 494-6271
v. Kyle & Emily Stenson (103 Beaver Pond) ..... (406) 494-8225
w. Glen & Patti Rafish (108 Beaver Pond)..... (406) 723-4647
x. Harry & Mildred Voss (110 Beaver Pond) ..... (406) 533-0890
y. Mark & Sue Stearns (214 Beacon Rd)..... (406) 494-7625
z. Louis & Linda Lovshin (12 Nickel Annie Ln) ..... (406) 494-2523
aa. Ken Rustad (36 Nickel Annie Ln) ..... (406) 494-2601
bb. Ken Rustad (58 Nickel Annie Ln) ..... (406) 494-2601
cc. Henry Beckman (5805 Albany))..... (406) 494-4866
dd. Roy & Connie Beckman (5800 Albany)) ..... (406) 494-1207

B. Priority Two

4. LOCAL ENGINEERS

HKM Engineering Inc.....(Office) (406) 723-8213
Dick Talley.....(Home) (406) 494-3043
..... (Cel) (406) 491-1461
Pioneer Technical (Brad Archibald or Tim Hilmo).....(Office) (406) 782-5177
Brad Archibald.....(Home) (406) 494-6549
..... (Cel) (406) 490-3032

5. MONTANA DEPARTMENT OF NATURAL RESOURCES AND CONSERVATION

a. Dam Safety Section Engineers:.....(Office) (406) 444-6613

Michele Lemieux Supervisor..... (Home) (406) 225-9062

.....(Cel) (406) 459-3572

b. Chad Newman (EAP Coordinator) ..... (Office)(406) 444-9362

.....(Home)(406) 442-9199

.....(Cel) none

c. Water Operations Bureau.....(Office) (406) 444-6816

Laurence Siroky, Bureau Chief ..... (Home) (406) 442-2806

..... (Cel) (406) 431-7475

d. Jim Beck, (Helena Regional Office).....(Home) (406) 266-3026

.....Office: (406) 444-6695

.....Cel: (406) 431-9419

6. NATIONAL WEATHER SERVICE

Missoula, MT..... (406) 329-4715

Information.....(406) 329-4840

7. BUTTE-SILVER BOW DEPARTMENT OF PUBLIC WORKS WATER UTILITY DIVISION

Director of Public Works: Mr. Dan Dennehy,.....Office: (406) 497-6520

.....Home.: (406) 565-0358

.....Cel: (406) 490-5802

Operations Manager: Mr. Rick Larson .....Office: (406) 497-6518

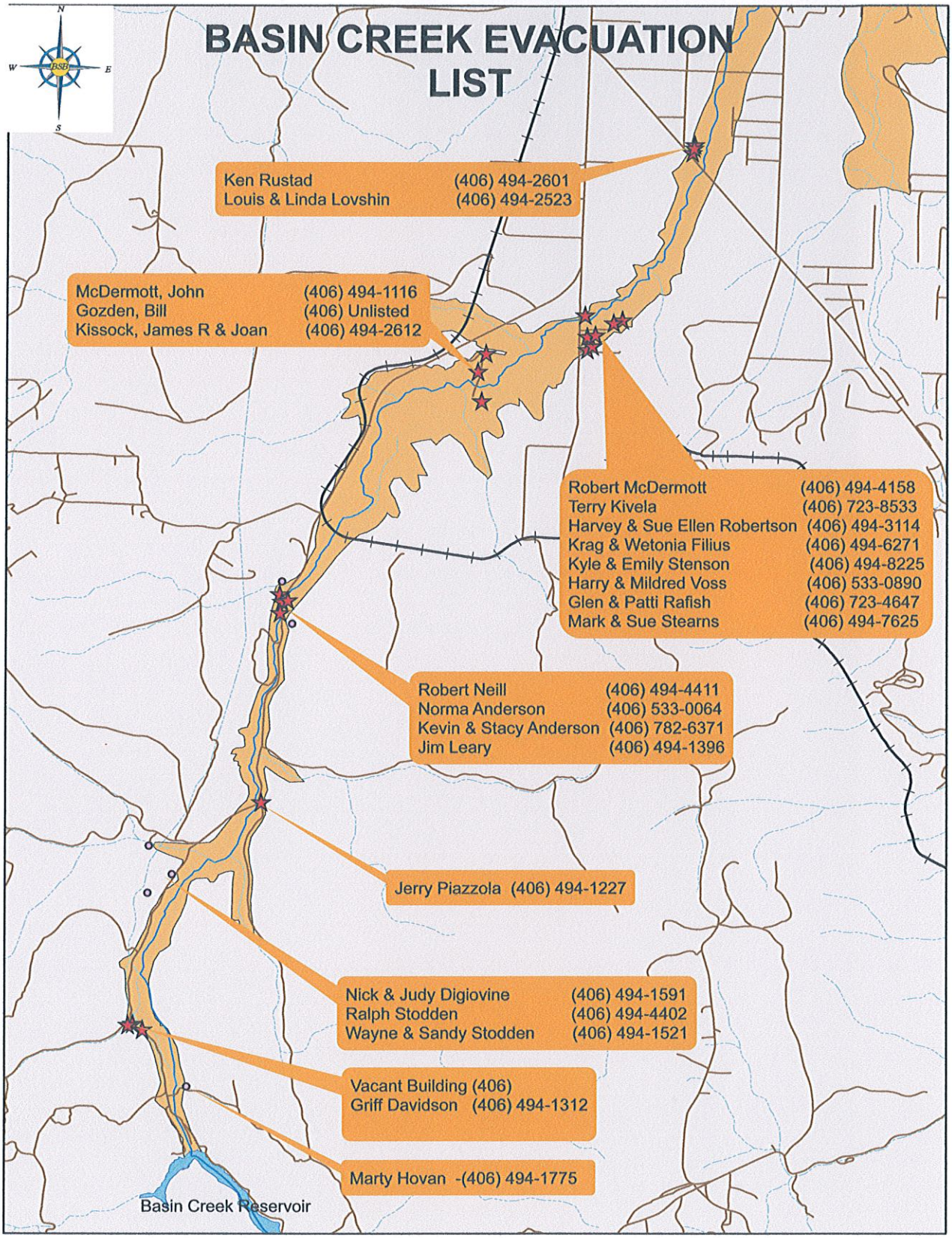
.....Home: (406) 782-7673

.....Cel: (406) 490-1997

8. BUREAU OF LAND MANAGEMENT ..... (406) 533-7600

9. MONTANA DEPARTMENT OF STATE LANDS ..... (406) 444-2074

10. U.S. FOREST SERVICE, REGIONAL ENGINEERING OFFICE..... (406) 494-2147


BASIN CREEK EVACUATION LIST
N
W
E
S
Ken Rustad (406) 494-2601
Louis & Linda Lovshin (406) 494-2523
McDermott, John (406) 494-1116
Gozden, Bill (406) Unlisted
Kissock, James R & Joan (406) 494-2612
Robert McDermott (406) 494-4158
Terry Kivela (406) 723-8533
Harvey & Sue Ellen Robertson (406) 494-3114
Krag & Wetonia Filius (406) 494-6271
Kyle & Emily Stenson (406) 494-8225
Harry & Mildred Voss (406) 533-0890
Glen & Patti Rafish (406) 723-4647
Mark & Sue Stearns (406) 494-7625
Robert Neill (406) 494-4411
Norma Anderson (406) 533-0064
Kevin & Stacy Anderson (406) 782-6371
Jim Leary (406) 494-1396
Jerry Piazzola (406) 494-1227
Nick & Judy Digiovine (406) 494-1591
Ralph Stodden (406) 494-4402
Wayne & Sandy Stodden (406) 494-1521
Vacant Building (406)
Griff Davidson (406) 494-1312
Marty Hovan -(406) 494-1775
Basin Creek Reservoir

APPENDIX D

DAM INCIDENT REPORT FORM

DAM INCIDENT REPORT FORM

DATE _____ TIME _____

NAME OF DAM _____

STREAM NAME _____

LOCATION _____

COUNTY _____

OBSERVER _____

OBSERVER TELEPHONE _____

NATURE OF PROBLEM _____

LOCATION OF PROBLEM AREA (Looking Downstream) _____

EXTENT OF PROBLEM AREA _____

FLOW QUANTITY AND COLOR _____

WATER LEVEL IN RESERVOIR _____

IS SITUATION WORSENING? _____

EMERGENCY STATUS _____

CURRENT WEATHER CONDITIONS _____

ADDITIONAL COMMENTS _____